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Chronology of KSC and KSC Related Events for 1992

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John F. Kennedy Space Center

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CHRONOLOGY OF KSC

AND KSC RELATED EVENTS

FOR 1992

BY KEN NAIL, JR.

KSC LIBRARY ARCHIVIST

FOREWORD

This 1992 Chronology is published to fulfill the requirements of KMI 2700.1 (as revised) to describe and document KSC's role in NASA's progress. Materials for this Chronology were selected from a number of published sources. The document records KSC events of interest to historians and other researchers. Arrangement is by date of occurrence, though the source cited may be dated one or more days after the event.

Materials were researched and prepared for publication by Historian-Archivist Ken Nail, Jr. (EG&G FLORIDA, Inc.). The 1992 Chronology includes an index beginning on page 257. For the added convenience of researchers, each entry has been headlined. Comment on the Chronology should be directed to the John F. Kennedy Space Center, LIBRARY-E, Kennedy Space Center, Florida, 32899.

Walter L. Covington
Center Services

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JANUARY

January 1: **CRIPPEN BECOMES DIRECTOR TODAY**

Robert L. Crippen, 54, becomes Kennedy Space Center's fifth director today; he was preceded by Dr. **Kurt H. Debus, Lee Scherer, Richard G. Smith** and **Forrest S. McCartney**. KSC Launch Director **Robert B. Sieck** said, "Crip understands the work environment down here, the priorities and the critical areas because he was here for years [1986-1989]. That knowledge I think he will apply to his management style as he becomes shepherd of all of this." Crippen joined NASA as an astronaut in 1969 and flew as pilot in April 1981 on Columbia's first flight; later he commanded three Shuttle missions. He is the first former astronaut to become a NASA field center director; Crippen is no longer on active flight status. **Norman Parmet**, Chairman of NASA's Aerospace Safety Advisory Panel, said, "I like Bob Crippen very much. I don't always agree with what he does, but that's part of the game. He's his own man." [Banke, FLORIDA TODAY, p. 1A, Jan. 1, 1992, Brown, FLORIDA TODAY, pp. 10E & 9E, Dec. 29, 1991.]

January 2: **STS 42: DISCOVERY UPDATE**

At Launch Complex 39A, hydraulic tests have been completed on Discovery's solid rocket boosters (SRBs). Work in progress: post-holiday deconfiguration; preparations for electrical power up; preparations for loading of hypergolic fuels next week; launch pad validations; helium signature test preparations; power reactant and storage distribution system T-0 checks. Work scheduled: main engine frequency response test; helium signature test; terminal countdown demonstration test (January 6-7); crew arrival (January 5); flight readiness review (January 9). The International Microgravity Laboratory is in the Orbiter payload bay and has been closed out for flight. The payload bay doors are not scheduled to be opened prior to flight. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 2, 1991.]

PROCESSING UPDATE: ATLANTIS

Auxiliary Power Unit 2 has been removed from Atlantis in OPF Bay 2 and the removal of APU 1 is underway. Other activities now in progress: heat shield removal for inspection; resumption of SRB stacking operations in the VAB; continuation of closeouts of solid rocket booster joints. Scheduled work: lower main landing gear and opening the payload bay doors. Testing of NASA's Atmospheric Laboratory for Applications and Sciences is complete and closeouts have begun. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 2, 1991.]

OPF HIGH BAY 1: ENDEAVOUR

Ku-band power amplifier tests and brake anti-skid tests have been completed on Endeavour in OPF Bay 1. Work in progress: thermal protection system operations; insulation of main propulsion system lines in the aft compartment; midbody closeouts. The INTELSAT rebooster perigee kick motor is scheduled to arrive at the Astrotech (Titusville, FL) facility for flight processing at the end of January. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 2, 1991.]

COLUMBIA'S ONGOING MODIFICATIONS

The Space Shuttle Columbia remained powered up through the holidays, allowing work on the vehicle to continue. Structural inspections and tests in critical areas are part of the modifications and refurbishments scheduled for this week. Columbia is targeted for its ferry flight return to KSC around the end of January. Processing will then begin for its next mission, STS-50, the first extended duration Orbiter mission scheduled to last 13 days. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 2, 1991.]

January 3:

STS 42/IML PROCESSING

The post-holiday deconfiguration of Discovery at Launch Complex 39A has been completed along with SRB hydraulic tests and crew compartment vent door cycling and checks. Work in progress: electrical power up; main engine frequency response test and ball seal leak checks; preparations for loading of hypergolic fuels next week; launch pad validations; helium signature test preparations; power reactant and storage distribution system T-0 checks. Scheduled work: helium signature test; pre-launch propellant servicing; TCDT, LRR, FRR and launch of STS 42 in the third week of January. [KSC SHUTTLE STATUS REPORTS, 10:00 a.m., Jan. 3, 1991, "Workers Back at KSC," FLORIDA TODAY, p. 3A, Jan. 3, 1992.]

ATLANTIS IN OPF HIGH BAY 2

Testing of NASA's Atmospheric Laboratory for Applications and Sciences is complete and closeouts have begun in OPF High Bay 2. Atlantis' APU units 1 and 2 have been removed; hydraulic operations have been completed and the Orbiter's landing gear have been lowered. Work in progress: auxiliary power unit 3 leak and functional test; preparations for removal of main engines next week; main engine heat shield removal; preparations for installation of fuel cell 1; SRB stacking operations in the Vehicle Assembly Building; continuing closeouts of solid rocket booster joints in the VAB; water spray boiler checkout and service and forward reaction control system checkout and functional test. The payload bay doors are scheduled to be opened shortly. [KSC SHUTTLE STATUS REPORTS, 10:00 a.m., Jan. 3, 1991.]

ENDEAVOUR IN OPF HIGH BAY 1

Endeavour's Ku-band power amplifier tests and brake anti-skid tests have been completed in OPF High Bay 1. Work in progress: electrical power up; electrical verifications; flash evaporator checks and water spray boiler servicing; main engine controller tests; thermal protection system operations; insulation of main propulsion system lines in Endeavour's aft compartment; midbody closeouts; main engine heat shield seal leak tests. Scheduled work: Ku-band system checks and APU leak and functional test. The INTELSAT reboost perigee kick motor is scheduled to arrive at the Astrotech (Titusville, FL) facility for flight processing at the end of January. [KSC SHUTTLE STATUS REPORTS, 10:00 a.m., Jan. 3, 1991.]

COLUMBIA IN PALMDALE, CA

The Space Shuttle Columbia remains powered up as structural inspections and tests in critical areas continue. Managers will be meeting later next week to determine the

delivery date of the vehicle back to KSC. Columbia is targeted for its ferry flight return near the end of this month. Once back at KSC, processing will then begin for its next mission, STS 50, the first extended duration Orbiter mission scheduled to last 13 days. [KSC SHUTTLE STATUS REPORTS, 10:00 a.m., Jan. 3, 1991.]

TCDT BEGINS TODAY

Discovery's STS 42 crew will arrive at Kennedy Space Center today to take part in the two-day Terminal Countdown Demonstration Test which begins at 11 a.m. The crew includes Commander **Ronald Grabe**, Pilot **Stephen S. Oswald**, Mission Specialists **Norman E. Thagard**, **David C. Hilmers** and **William F. Readdy** and Payload Specialists **Roberta L. Bondar** (Canadian Space Agency) and **Ulf Merbold** (European Space Agency.) [Brown, FLORIDA TODAY, p. 1A, Jan. 5, 1992, Brown, FLORIDA TODAY, Jan. 6, 1992.]

January 5:

1992 SHUTTLE LAUNCH PLANS

Target dates for nine 1992 shuttle launches have been announced:

Jan. 22	Discovery STS 42	Seven astronauts on a seven-day mission carrying a pressurized Spacelab module configured as the International Microgravity Laboratory
March 14	Atlantis STS 45	Seven astronauts on an eight-day mission carrying Spacelab hardware configured as ATLAS-01, a laboratory for studying the sun and Earth's atmosphere.
April 9	Endeavour STS 49	Seven astronauts on a seven-day mission, the first voyage of NASA's newest Orbiter. Space-walking astronauts will rescue a stranded Intelsat 6 communications satellite.
June 3	Columbia STS 50	Seven astronauts on a planned 13-day mission, the first so-called Extended Duration Orbiter mission, which would be the longest in Shuttle program history. In the cargo bay will again be a pressurized Spacelab module configured as the United States Microgravity Laboratory.
July 2	Atlantis STS 46	Seven astronauts on a seven-day mission carrying the Italian Tethered Satellite System experiment and EURECA, a European Space Agency pallet of experiments that will be deployed then retrieved six months later during another Shuttle flight.

August 12	Endeavour STS 47	Seven astronauts on a seven-day mission with a Spacelab configured with experiments sponsored by Japan. The mission will feature Mark C. Lee and N. Jan Davis, the first married astronaut couple to fly in space together.
Sept. 24	Columbia STS 52	Six astronauts on a nine-day mission carrying the Laser Geodynamics Satellite, a passive spacecraft that will reflect laser beams shot from Earth so scientists, for example, can measure movement in the planet's crust.
Oct. 15	Discovery STS 53	Five astronauts on a four-day mission to deploy a secret Defense Department satellite, believed to be an advanced photo reconnaissance spacecraft.
Dec. 3	Endeavour STS 54	Five astronauts on a six-day mission to deploy NASA's fifth Tracking and Data Relay Satellite.

CRIPPEN TO MAKE ROUNDS IN BREVARD

Incoming KSC Director **Robert L. Crippen** has a full round of meetings scheduled, starting with an afternoon press conference tomorrow (January 6). Crippen will also address the space center's 20,000 employees on the 6th. Over the next three weeks, he will meet with community leaders throughout Brevard County including the Florida Space Business Roundtable headed by former U. S. Rep. **Bill Nelson** and **Lyle Holloway** of McDonnell Douglas' Delta launch team. ["New KSC Director Begins His Rounds in Brevard," FLORIDA TODAY, p. 9E, Jan. 5, 1992; Glisch, THE ORLANDO SENTINEL, Jan. 7, 1992.]

STS 42 CREW ARRIVES AT KSC

The crew of Discovery's STS 42 mission arrived at Kennedy Space Center today for a two-day practice countdown. "We're really pleased to be here. NASA has a very ambitious 1992 on its schedule, and we're just proud and excited to be the first ones up," said Commander **Ronald Grabe**. "We're really anxious to get on with our launch," he added. The crew includes: Pilot **Stephen S. Oswald**, Mission Specialists **Norman E. Thagard**, **David C. Hilmers** and **William F. Readdy** and Payload Specialists **Roberta L. Bondar** and **Ulf Merbold**. The practice countdown begins January 6 and concludes with a mock launch on January 7. ["Astronauts Arrive at KSC," FLORIDA TODAY, p. 1A, Jan. 6, 1992, Brown, FLORIDA TODAY, p. 4A, Jan. 6, 1992; Halvorson, FLORIDA TODAY, Jan. 7, 1992.]

January 6:

STS 42: MAIN ENGINE TEST DONE

Discovery's main engine flight readiness test for its upcoming STS 42 mission has been completed at Launch Complex 39A. Work in progress: Terminal Countdown Demonstration Test (TCDT); T minus zero is planned at 11 a.m. tomorrow with a simulated main engine cutoff; STS-42 flight crew emergency egress training at the launch pad; helium signature leak test of the three main engines and main propulsion system; preparations to load hypergolic propellants on board the Orbiter for use by the in-flight engines and thrusters; Launch Readiness Review. Scheduled work includes: STS 42

crew wake up at 6 a.m. and crew departure from the O & C Building at 7:45 a.m. January 7; crew arrival at LC 39A at 8:15 a.m.; the crew will depart for Johnson Space Center after the TCDT; loading hypergolic propellants into the Orbiter set to begin January 8 and continue through January 10; the Flight Readiness Review is planned for January 9 and launch remains targeted for the third week in January. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 6, 1992.]

STS 45: ATLANTIS PROCESSING

Work in progress on the Space Shuttle Atlantis includes: electrical and mechanical connection of fuel cells 1 and 2; functional testing of the forward reaction control system; installation of the Orbiter's brakes in preparation for its STS 45 flight; inspections of the radiators; reinstallation of several reinforced carbon T-seals and panels on the leading edges of the wings; the seals have successfully passed inspections and are in good condition; preparations to remove the three main engines; stacking of the right forward assembly in the Vehicle Assembly Building. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 6, 1992.]

ENDEAVOUR IN OPF BAY 1

In Orbiter Processing Bay 1, Endeavour continues to be prepared for its debut flight in April. Work in progress: inspections of the liquid hydrogen 17-inch disconnect umbilical; leak and functional tests of the flash evaporator system; closeouts of the midbody; installation of tiles around the nose landing gear; preparations to service the Orbiter with potable water; thermal protection system operations. Scheduled work includes systems testing of the microwave scanning beam landing system and structural leak checks of the drag chute pod. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 6, 1992.]

KSC: JOB CUTS PLANNED

By 1996 there will be 5,000 fewer jobs at Kennedy Space Center, according to NASA officials. That represents a 20 percent cut in the 25,000-member workforce. The drop in KSC employment will come in one of three ways: shifts of contract employees from Shuttle to Space Station; attrition; layoffs. New KSC Director **Robert L. Crippen**, who held his first press conference as director, said, "Five-thousand (jobs) would be significant to be done by attrition across the program. I believe there will have to be reductions to accomplish those kinds of numbers." NASA plans to cut its employment by 3 percent a year for the next five years. "It's not going to occur all at once," said Crippen. "We're trying to do it in 3 percent bites. We do want it to occur gradually." The employment shift is part of NASA's plan to shift its focus from the Shuttle Program to new projects which the agency has in store for the next century. "Why are we doing it?" Crippen asked rhetorically. "The why is that it is NASA's ambition - and rightfully so - to be doing other exciting things and exploring new horizons. That includes building space station Freedom; it includes going back to the moon and erecting a lunar base, and then sending people on to Mars. All of those things cost money, and there aren't going to be many new bucks for NASA to work with," he said. "Consequently, we need to be able to reduce programs like Shuttle - but do it safely - so that we can do these other exciting things." Crippen also referred in his press conference to NASA's plan to fly as many as nine Shuttle missions this year. "It's a real challenge to be able to talk about the flight rate that we're talking about and do it safely, yet still be able to do it more economically." [Halvorson, FLORIDA TODAY, pp. 1A-2A, Jan. 7, 1992, "NASA to Cut 5,000 Space Shuttle Jobs in 5 Years," THE NEW YORK TIMES, p. A12, Jan.8, 1992.]

January 7: **TCDT: HILMERS FOURTH TIME**

"This is the fourth time around for me, but it never gets old," said astronaut **David C. Hilmers** about his participation in the pre-launch Terminal Countdown Demonstration Test for STS 42. "Every time I come out here for one of these countdown demonstration tests, the old adrenalin gets flowing and the butterflies start to churn around in the stomach." Hilmers and his crew mates have been training for this mission for two years. "We're looking forward to coming back here in two weeks and doing it," he said. The other members of the STS 42 crew are: Commander **Ronald Grabe**, Pilot **Stephen S. Oswald**, Mission Specialists **William F. Readdy** and **Norman E. Thagard** and Payload Specialists **Roberta L. Bondar** and **Ulf Merbold**. [Halvorson, FLORIDA TODAY, p. 2A, Jan. 7, 1991.]

STS 42: LRR COMPLETED

The Launch Readiness Review for Discovery's STS 42 mission has been completed; there are no significant issues or concerns. Kennedy Space Center spokesman **Mitch Varnes** reported, "Everything went as planned in today's countdown test for the upcoming launch of Discovery. The managers feel we have a healthy vehicle and are on schedule for a launch later this month." Discovery's helium signature leak test and the STS 42 flight crew training at Launch Complex 39A have also been completed. Launch Complex 39A will be closed late today to nonessential personnel during the loading of toxic propellants. Work in progress: Terminal Countdown Demonstration Test (TCDT) concluded today on schedule at 11 a.m. with a simulated main engine cutoff and preparations are underway to load hypergolic propellants on board the Orbiter for use by the in-flight engines and thrusters. Scheduled work: STS 42 flight crew departure this afternoon; loading hypergolic propellants beginning today and through Friday (January 10); the Flight Readiness Review for STS 42 begins January 9. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 7, 1992, Banke, FLORIDA TODAY, p. 4A, Jan. 8, 1992.]

ATLANTIS' HEAT SHIELDS REMOVED

In OPF Bay 2, technicians have removed the heat shields from around the three main engines of Atlantis. Work in progress: leak checks of helium regulators in the midbody of the Orbiter; tests of the Ku-band antenna; electrical and mechanical connection of fuel cells 1 and 2; functional testing of the forward reaction control system; installation of the brakes; inspections of the radiators; reinstallation of several reinforced carbon T-seals and panels on the leading edges of the wings - the seals were inspected and are in good condition; disconnecting the three main engines from the orbiter. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 7, 1992.]

January 9: **FRR OPENS**

Kennedy Space Center hosts the STS 42 Flight Readiness Review today at which government and Shuttle contractor managers will set an official launch date for Discovery's mission; current plans target January 22 for liftoff. Officials noted that the schedule still has three days of padding in it so the launch date might be moved up. At Launch Complex 39A, workers continue loading toxic propellants into onboard storage tanks; this operation is expected to be concluded January 10. At LC 39A, workers repaired tiled on the Orbiter's underside. [Banke, FLORIDA TODAY, p. 2A, Jan. 9, 1992, KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 9, 1992, Campion & Malone, Note to Editors: NASA Managers Set Launch Date for STS 42, Jan. 9, 1992.]

ATLANTIS PROCESSING REPORT

All three main engines have been removed from Atlantis in OPF Bay 2. In addition, the Orbiter's Nose landing gear wheels have been mounted and the Main Propulsion System 4-inch quick disconnect line has been inspected and found to be in good shape. Work in progress: voltage tests of the fuel cells; tests of the Ku-band antenna; reinstallation of T-seals on the leading edges of the wings; main landing gear wheels are being mounted. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 9, 1992.]

ENDEAVOUR: HATCH SEAL REPLACED

In OPF Bay 1, technicians have replaced and completed an initial fit check an air lock hatch seal on Endeavour. Work in progress: midbody closeouts; thermal protection system operations and leak checks of the environmental control life support system. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 9, 1992.]

January 10:

IML IN DISCOVERY PAYLOAD BAY

The International Microgravity Laboratory is in Discovery's payload bay and has been closed out for flight and the bay doors are not scheduled to be opened prior to flight. Some middeck experiments are being prepared for installation aboard the vehicle just prior to flight. Work in progress: loading hyperbolic fuels on Orbiter and solid rocket boosters and preparations for ordnance operations next week. Work scheduled: trouble-shooting of electrical connections between Orbiter avionics bay and helium isolation valve on engine number 3; ordnance installation January 13. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 10, 1992.]

ATLANTIS IN OPF BAY 2

Testing of NASA's Atmospheric Laboratory for Applications and Sciences is complete and closeouts have begun in preparation for Atlantis' STS 44 mission; voltage tests on fuel cells have been completed. Work in progress: preparations for removal of helium tank next week; water spray boiler checkout ,service, leak and functional tests; preparations for installation of main engine; auxiliary power unit hot lube oil flush preparations; solid rocket booster stacking operations in the Vehicle Assembly Building and continuing closeouts of SRB joints in VAB. Work scheduled: installation of main engines and removal and replacement of helium tank. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 10, 1992.]

INTELSAT SCHEDULED TO ARRIVE

Endeavour's main payload for its maiden STS 49 mission - the INTELSAT reboost perigee kick motor - is scheduled to arrive at the Astrotech (Titusville, FL) facility for flight processing at the end of this month. The Orbiter has had its gaseous oxygen flow control valve installed. Work in progress: electrical verifications; flash evaporator checks and water spray boiler servicing; fuel cell checks; thermal protection system operations; insulation of main propulsion system lines in aft compartment; midbody closeouts and blanket installation; left hand external tank door checks and inspections. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 10, 1992.]

COLUMBIA UPDATE

The Space Shuttle Columbia remains powered up as structural inspections and tests in critical areas continue. Managers will be meeting today to determine the delivery date of the vehicle back to KSC. Columbia is targeted for its ferry flight return near the end of the month or early next month. Once back at KSC, processing will then begin for its next mission, STS 50, the first extended duration Orbiter mission scheduled to last 13 days. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 10, 1992.]

SAFETY AND SHUTTLE LAYOFFS

U. S. Rep. **Jim Bacchus** (D-Orlando, FL) wants Congress to investigate the impact of NASA's planned layoffs on Shuttle safety. He said, "We must not permit pressure for cost-cutting or the desire for increased efficiency to undermine our commitment to safety as our paramount priority. I have quite a few questions, and I intend to ask them. However NASA restructures or consolidates Shuttle activities, it must not be done in a way that undermines our ability to fly safely. My impression is that the Shuttle processing activities since Challenger have worked very well. And in restructuring or consolidating I don't want to break up a team that has been working very well." New KSC Director **Robert L. Crippen**, speaking to the space center workforce January 6, said that he has made flight safety the most important issue of his tenure. "There have been some insinuations that my arrival here at KSC was going to put a different focus on safety," Crippen said. "Well...read my lips. Safety is our No. 1 concern and it will remain so." [Halvorson, FLORIDA TODAY, p. 1A, Jan. 11, 1992.]

AMBASSADOR TO LEAVE KSC

The Ambassador, a full-scale replica of a Space Shuttle Orbiter, will soon depart Kennedy Space Center after being toured by nearly 2 million visitors during its year-long stay at KSC's Spaceport USA. The highly popular, free exhibit is scheduled to remain on display at Spaceport USA through January 19. Ambassador's owners Irvin and Kenneth Reid Productions, Inc., have plans to send the high-fidelity replica Orbiter overseas. Under a lease agreement between the owners and TW Recreational Services, Inc., operators of Spaceport USA for NASA, the Ambassador arrived in December 1990 for an expected stay of four months. The lease was extended until this mont due to a change in the owner's plans. "This has been a super exhibit," said **Ed Harrison**, Chief of KSC's Visitor Center Office. "We're delighted so many people have had the opportunity to se what a Shuttle Orbiter really looks like, both outside and in. We hope those who haven't had a chance to see it will have an opportunity before it leaves." Due to the popularity of Ambassador, NASA and TWRS are developing plans for a permanent replica Space Shuttle Orbiter. [NASA/KSC NEWS RELEASE NO. 3-92, Jan. 10, 1992, Hall, FLORIDA TODAY, p. 1B, Jan. 11, 1992.] Kennedy Space Center Spaceport USA News Release NT05 95, Jan. 10, 1992; Reitz, FLORIDA TODAY, p. 2B, Jan. 20, 1992.]

January 12:

MINOR VALVE PROBLEM: DISCOVERY

"We don't have any reason to be pessimistic yet," said KSC **Bruce Buckingham** regarding test which last week revealed a valve that regulates the flow of helium to main engine No. 3 was not working as it should. The problem has not repeated during subsequent tests and workers do not understand why the valve failed to work properly the first time. Officials have determined that the valve is not a risk to spaceflight because helium can be delivered to the main engines in a number of ways. More tests will be conducted on

January 13; routine preparations continue with the next major task being the completion of ordnance installation. [Banke, FLORIDA TODAY, p. 1A, Jan. 13, 1992, Banke, FLORIDA TODAY, p. 3A, Jan. 13, 1992.]

January 13: ORDNANCE INSTALLED: DISCOVERY

After Shuttle managers reviewed tests on a potentially faulty helium valve, Discovery was cleared for launch on its STS 45 mission January 22. "We retested it and everything checks out. It's go for flight; we're on schedule," said Kennedy Space Center spokeswoman Lisa Malone. Shuttle managers are treating the problem with the valve as an unexplained anomaly and the Orbiter will fly as it is. There is no concern about the safety of the launch because the valve is part of a redundant system that provides helium to the engines. The crew is expected to arrive at KSC at 9:00 a.m. on January 19; the countdown to launch begins at 1:00 p.m., said Malone.

Installation of ordnance devices on Discovery have been completed at Launch Complex 39A; successful replacement and retest of wiring for a valve between the helium supply tank and the No. 3 main engine in preparation for STS 42 have been completed as well. Work in progress: preparations to install the two contingency space suits into the Orbiter's airlock; launch countdown preparations; close outs of the avionics bays in the aft compartment; cleaning of the aft compartment; final preparations of the auxiliary power units and hydraulics system; initial close outs of the three main engines. Work scheduled: purges of the external tank January 14; close out the aft engine compartment for flight January 17; crew arrival January 19; launch countdown begins January 19 with launch at 8:53 a.m. EST, January 22. [KSC SHUTTLE STATUS REPORT, 11 A. M., Jan. 13, 1992, Banke, FLORIDA TODAY, p. 2A, Jan. 14, 1992.]

[] ATLANTIS: STS 45 PROCESSING ACTIVITIES

The three main engines of Atlantis have been installed as have been the waste containment system and the main landing gear tires. Atlantis is being readied for its STS 45 mission in OPF Bay 2; the following activities are on the current processing schedule: installation of auxiliary power units 1 and 2; functional testing of the orbital maneuvering system and reaction control system; leak and functional tests of the water spray boilers and of the waste containment system; calibration of the inertial measurement system. [KSC SHUTTLE STATUS REPORT, 11 A. M., Jan. 13, 1992.]

[] ENDEAVOUR: LEAK CHECKS OF WATER SYSTEM

In Orbiter Processing Facility Bay 1, Endeavour has had its potable water system checked for leaks. Work in progress includes: full testing of the external tank latches; functional test of the crew module side hatch; leak tests of the crew cabin, environmental control life support system and flash evaporator system; closeouts of the midbody; installation of tiles; thermal protection system operations. [KSC SHUTTLE STATUS REPORT, 11 A. M., Jan. 13, 1992.]

[] COLUMBIA MODIFICATIONS UPDATE

Power up work this week on Columbia includes tests of the auxiliary power units and the environmental control life system. Work is continuing to install the regenerable carbon dioxide removal system in the middeck. Modifications to install the drag chutes are continuing. The extended duration orbiter pallet is scheduled to arrive at KSC today by

C5 aircraft; the pallet will be transferred to the VAB high bay 2 for storage and checkout. Columbia is targeted to return to Florida on February 8; there will be a two-day ferry flight from California to Florida beginning February 7. [KSC SHUTTLE STATUS REPORT, 11 A. M., Jan. 13, 1992.]

January 14: **DELAY FOR ENDEAVOUR?**

NASA may have to delay the maiden launch of Endeavour, the newest Space Shuttle. "We're reviewing our schedules right now and how much work we have left in the hangar and how much time we need to complete that work," said **Lisa Malone**, a Kennedy Space Center spokesperson. Workers put in voluntary overtime to help overcome as much as a six-week processing delay for the Orbiter. If Endeavour were on time, it would be rolled over to the VAB on February 14 and rolled out to Launch Complex 39B on February 21. Managers will meet January 15 to determine new target dates for these processing milestones. The NASA headquarters launch schedule shows a May launch date for Endeavour. [Banke, FLORIDA TODAY, p. 2A, Jan. 15, 1992, Banke, FLORIDA TODAY, p. 1A, Jan. 16, 1992.]

January 16: **ORDNANCE OPERATIONS COMPLETED**

Final ordnance operations have been completed on Discovery prior to the launch of its STS 42 mission on January 22. Work in progress: pressurization of the hypergolic propellant tanks for flight; launch countdown preparations; preparation of the avionics bays in the aft compartment for flight; cleaning of the aft compartment; final preparations of the auxiliary power units and hydraulics system; closeouts of the three main engines. Scheduled work includes: removal of service platforms from the launch platform; close out of the aft engine compartment for flight tomorrow; STS 42 flight crew arrives January 19 at 9:00 a.m.; launch countdown begins at 1:00 p.m. on the 19th and launch is targeted for 8:53 a.m. January 22. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 16, 1992.]

ATLANTIS STS 45 PROCESSING ACTIVITIES

Technicians working in OPF Bay 2 have finished filling and bleeding the hydraulic system of the Space Shuttle Atlantis. Activities in progress: testing of the nose wheel steering system and the communications system; functional testing of the orbital maneuvering system, reaction control system and the waste containment system; checkout of two newly installed helium tanks for the main propulsion system; configuring of the payload bay for the STS 45 payloads and leak and functional tests of the water spray boilers. The ATLAS payload is scheduled to arrive at the Orbiter Processing Facility on January 22. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 16, 1992.]

ENDEAVOUR'S PROCESSING ACTIVITIES

Among the activities underway in OPF Bay 1 in the processing of the Space Shuttle Endeavour are the following: removal of the main landing gear roll around tires and installation of flight tires; tests of the main propulsion system's gaseous oxygen system; sampling and adjusting of the water loops; structural leak checks of the drag chute pod; leak tests of the crew cabin; leak checks of the environmental control life support system; leak and functional tests of the flash evaporator system; closeouts of the midbody; installation of tiles; thermal protection system operations; fit checks of the Orbiter's waste containment system. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 16, 1992.]

COLUMBIA'S MODIFICATION PROGRESS

Final preparations are being made on Columbia to finish the modification work planned at Palmdale, CA. Technicians are completing work on wire trays in the midbody of the Orbiter. Closure of the payload bay doors is scheduled this weekend; final tests of the hydraulic system are planned. Work is continuing to install the regenerable carbon dioxide removal system in the Orbiter; modifications to install the drag chute are continuing. The mock orbital maneuvering system pods are scheduled to be installed late next week and the tail cone is targeted for installation late this month or early next month. The chin panel and the forward reaction control system simulator have been installed already. The extended duration Orbiter pallet is being stored in the VAB high bay 2 where it will be checked out for installation in Columbia's payload bay. The return of Columbia is planned for February 8 at the end of a two-day ferry flight from California. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 16, 1992.]

January 17: **RAILROAD SYSTEM CONTRACT AWARDED**

Railroad Track Construction Corp. (St. Augustine, FL) has been awarded a three-year, $2,889,826 contract to maintain the 40-mile railroad system at Kennedy Space Center. The contract is the third the firm has received for providing this service to the space center. The first contract was awarded in 1983; under the terms of the contract, the company maintains the tracks, right-of-way, grade crossings and crossing signals. The 12-mile main line of the KSC railway is primarily used to transport Space Shuttle solid rocket booster (SRB) segments that arrive from Utah. This part of the railway runs from a point where it meets the Florida East Coast Railway two miles north of Titusville to a distribution and handling facility just north of the Vehicle Assembly Building. From the distribution center, the segments are transported by truck to the VAB. Once in the VAB, four segments are assembled to make up one of the Shuttle's two SRBs. After launch, the spent boosters are recovered, refurbished and sent back as individual segments to Utah. The rest of the railroad includes track west and south of the VAB to the Locomotive Maintenance Facility, as well as northeast to Space Shuttle Launch Pads 39A and 39B. From the pads, the line runs south along the Atlantic coastline to Cape Canaveral Air Force Station (CCAFS). The KSC railroad is also used to transport other fuels for the Shuttle and additional space hardware for both NASA and CCAFS, the site of commercial unmanned rocket launches. [NASA/KSC NEWS RELEASE NO. 7-92, Jan. 17, 1992.]

January 17: **TANKS READIED FOR FLIGHT**

"We're still right on schedule," said Kennedy Space Center spokeswoman **Lisa Malone** of the pre-flight preparations being made at Launch Complex 39A. KSC's Payload Manager **Mike Kinnan** said, "We're looking good and we'll be ready to go next week." Discovery's hypergolic propellant tanks have been pressurized for its STS 42 mission which begins at 8:53 a.m., January 22. Work in progress: launch countdown preparations; removal of thruster covers from the reaction control system; stowing flight crew equipment in the middeck; tests of the leak detectors and hazardous gas system at the launch pad; washing down the mobile launcher platform and flame trench; preparation of the avionics bays in the aft compartment for flight; cleaning of the aft compartment and installation of its flight doors. The removal of service platforms from the launch platform is scheduled. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 17, 1992, Banke, FLORIDA TODAY, p. 4A, Jan. 17, 1992.]

STS 45 PROCESSING: ATLANTIS

Atlantis' STS 45 ATLAS payload is scheduled to arrive at Kennedy Space Center's OPF Bay 2 on January 24, two days after the planned launch of Discovery on its STS 42 mission. STS 45 work in progress: leak checks of the main propulsion system; installation of an improved auxiliary power unit in the No. 2 slot; inspections of the windows in the crew cabin; testing of the nose wheel steering system and communications system; functional testing of the orbital maneuvering system, reaction control system and the waste containment system; configuring the payload bay for the ATLAS payload. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 17, 1992.]

ENDEAVOUR: WORK IN PROGRESS

Processing activities include: installation of the Orbiter's flight tires; preparation to service the ammonia boiler; tests of the flight control aerosurfaces and the main propulsion gaseous oxygen system; sampling and adjusting of the water loops; structural leak checks of the drag chute pod; leak tests of the crew cabin; leak checks of the environmental control life support system; leak and functional tests of the flash evaporator system; closeouts of the midbody; installation of tiles; thermal protection system operations and fit checks of the Orbiter's waste containment system. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 17, 1992.]

January 19:

APOLLO 11 SOCIETY'S TOWER PLANS

The Apollo 11 Society continues to plan and hope for the rescue and preservation of the launch tower from which the Apollo 11 moon landing mission was begun. Today the tower is located in KSC's Industrial Area; it has been cut into sections and has been rusting away since 1984. The Apollo 11 Society wants the tower saved in its entirety and displayed upright and they want it declared a national monument: "The mission of Apollo 11 was to put a human being on the moon, an actual act of stepping onto another heavenly body in the cold reaches of space, an act that will be perceived by future generations as a stepping stone to the universe," according to Society President **Bill Bivings**. The primary stumbling block to the restoration of the tower is the price tag, estimated to be $20 million or more. [Fiorini, FLORIDA TODAY, pp. 1A-2A, Jan. 19, 1992; "Agencies' Mission: Save the Tower," FLORIDA TODAY, p. 2A, Jan. 19, 1992; "Launch Towers," FLORIDA TODAY, p. 2A, Jan. 19, 1992.]

CREW OF STS 42 ARRIVES TODAY

The seven-member crew of Discovery's STS 42 mission is expected to arrive at Kennedy Space Center today about 9 a.m. EST. The crew includes: Commander **Ronald Grabe**; Pilot **Stephen S. Oswald**; Mission Specialists **David C. Hilmers, William F. Readdy** and **Norman E. Thagard**; Payload Specialists **Roberta L. Bondar** (Canada) and **Ulf Merbold** (European Space Agency.) [Halvorson, FLORIDA TODAY, p. 1A, Jan. 19, 1992.]

January 20:

LAUNCH MINUS TWO DAYS

Launch of the Space Shuttle Discovery on its STS 42 mission remains scheduled for the opening of the two-hour and 48 minute window, or at 8:53 a.m. EST Wednesday, January 22. A major task of the countdown today is loading liquid oxygen and liquid hydrogen into the Orbiter's onboard fuel cell storage tanks. Launch Complex 39A is cleared of all non-essential personnel for this operation which begins at 11 a.m. and ends at 4 p.m.

Engineers are troubleshooting a recorder called modular auxiliary data system (MADS) located in the Orbiter's middeck. MADS records information such as temperatures, vibrations, pressures of various systems on the Orbiter such as the main engines, the orbital maneuvering system and reaction control system. Data recorded by MADS is reviewed after the mission. MADS supplements existing Orbiter instrumentation. The exact problem with MADS has not yet been determined. Engineers plan to remove and replace the recorder; changeout and retest operations are expected to be completed by noon on Tuesday. The seven-member flight crew arrived yesterday (January 19) to begin final preparations for the launch. Today, the crew will have a brief medical exam, perform fit checks of their equipment and review flight plans. Commander **Ronald Grabe**, and Pilot **Stephen S. Oswald** are scheduled to practice approaches to the SLF in the Shuttle Training Aircraft and in their T-38 jets today. The STS 42 launch countdown began at 1 p.m. yesterday as scheduled; the count entered the first of several built-in holds at 5 a.m. This hold is four hours long. Overnight, firing room 3 console engineers prepared Discovery's three main engines for flight, including power up of the controllers, purges of the engines and functional checks. The rotating service structure is scheduled to be moved away from the launch vehicle at 1 p.m. Tuesday (January 21); loading of a half a million gallons of liquid oxygen and liquid hydrogen propellants into the external tank is scheduled to begin at 12:33 a.m. Wednesday (January 22). Discovery will be carrying the International Microgravity Laboratory into space for a seven-day flight with the landing planned at Edwards Air Force Base, CA. More than 200 scientists from 16 countries are participating in the IML investigations. Tomorrow (January 21), beginning at 9 a.m., technicians will load flight experiments in nine middeck lockers in the Orbiter's middeck. Because of their nature, these experiments require late stowage into the vehicle. Weather forecasts for January 22's launch indicate there will be an 80 percent chance of having acceptable weather at the opening of the window and a 90 percent chance for good weather during the entire launch window. [KSC SHUTTLE STATUS REPORT, "Launch Minus Two Days", 9:30 a.m., Jan. 20, 1992, Leary, THE NEW YORK TIMES, p. A7, Jan. 21, 1992; Banke, FLORIDA TODAY, p. 1A, Jan. 20, 1992.]

January 21: **LAUNCH MINUS ONE DAY**

Launch of Discovery's STS 42 mission remains scheduled for the opening of the two-hour and 48 minute window, or at 8:53 a.m. EST Wednesday, January 22. Overnight, engineers replaced a modular auxiliary data system [see story above]. Members of the flight crew were briefed this morning on the status of the vehicle, payload and weather. Red team members - Mission Specialists **William F. Readdy, David C. Hilmers** (who replaced the late **Manley "Sonny" Carter** who was killed in a plane accident last year) and Payload Specialist **Ulf Merbold** - are scheduled to be awakened at 8 p.m. tonight in preparation for the launch. Blue team members -- Commander **Ronald Grabe**, Pilot **Stephen S. Oswald**, Mission Specialist **Norman E. Thagard** and Payload Specialist **Roberta L. Bondar** -- are scheduled to be awakened at about 4 a.m. EST tomorrow for the flight. Yesterday, liquid oxygen and liquid hydrogen reactants were successfully loaded into the Orbiter's onboard fuel cell storage tanks. The Orbiter's communications systems have been activated. The countdown for STS 42 began at 1 p.m. Sunday as scheduled. The count entered another built-in hold at 5 a.m. today which extends until 6:33 p.m. tonight. The rotating service structure will be moved away from the launch vehicle at noon today. Loading of half a million gallons of liquid oxygen and liquid hydrogen propellants into the external tank will occur beginning at 12:33 a.m. Wednesday (January 22). This morning, the International Microgravity Laboratory in Discovery's payload bay was powered down in preparation for launch. Shortly after launch, crew members will activate the systems aboard IML. Today, technicians will load dozens of

experiments in nine lockers in the Orbiter's middeck. Because of their nature, these experiments require late stowage into the Orbiter. Forecasts for launch indicate there will be a 90 percent chance of having acceptable weather at the opening of the window and a 95 percent chance for good weather during the entire launch window. The expected temperature at launch time is 54 degrees. [KSC SHUTTLE STATUS REPORT, "Launch Minus One Day," 9:30 a.m., Jan. 21, 1992; Banke, FLORIDA TODAY, p. 10E, Jan. 19, 1992.]

FISK: MOST INTERNATIONAL MISSION EVER

It is the most international mission that we have ever undertaken," said NASA Space Science Chief **Lennard A. Fisk** in a Kennedy Space Center press conference televised over closed circuit television from the Press Site near the Vehicle Assembly Building. Shuttle Program Director **Leonard S. Nicholson** said, "We're really ready to go." Weather is forecast to be 95 percent favorable for launch tomorrow morning. [Banke, FLORIDA TODAY, p. 6A, Jan. 22, 1992.]

January 22:

STS 42 LAUNCHES 1 HOUR LATE

"We've had a flight every month and a half for well over three years," remarked Admiral **Richard H. Truly** following the successful launch of STS 42. "The achievement is flying this many flights and to do it safely on a regular basis." Discovery's launch was the 20th successful launch after the Challenger 51-L accident January 28, 1986. The STS 42 crew included: Commander **Ronald Grabe**, Pilot **Stephen S. Oswald**, Mission Specialists **Norman E. Thagard, William F. Readdy** and **David C. Hilmers** and Payload Specialists **Roberta L. Bondar** (Canada) and **Ulf Merbold** (Germany). Problems delayed the launch of Discovery on its STS 42 mission for an hour this morning; the Orbiter finally lifted off at 9:52:33.0491 a.m. EST and headed for an orbit 187 miles above the Earth. Late in the countdown three problems were detected: sensors near the launch pad noted an electrical charge in the atmosphere which was outside launch limits; a switch on one of Discovery's fuel cells was found to be faulty but mission managers decided there was no danger to flight safety; the Orbiter's rear engine compartment and payload bay were purged of high levels of gaseous oxygen. Preliminary reports indicate the boosters look very good. Thorough inspections will be conducted at Hangar AF at Cape Canaveral Air Force Station. Both solid rocket boosters are estimated to arrive at Port Canaveral at 9 p.m. tonight. High sea state conditions make the towing operation slower. There are 30 knot winds and 10 foot waves. They will remain overnight in port and the ships will begin the tow to Hangar AF at sunrise tomorrow. They impacted the Atlantic Ocean due east of Jacksonville. Larger than normal crowds were on hand to view the launch; officials estimated the spectators to number between 40,000 and 45,000 persons. Landing is planned on Wednesday, January 29, at Edwards Air Force Base (CA) at approximately 11:05 a.m. EST. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 23, 1992, Leary, THE NEW YORK TIMES, p. A11, Jan. 23, 1992, Halvorson and Banke, FLORIDA TODAY, p. 1A-2A, Jan. 22, 1992.]

X-15 PILOT JOINS SPACE MIRROR HONOREES

Air Force Major **Michael J. Adams**, who was promoted to astronaut status posthumously, was killed while flying the X-15 experimental aircraft on November 15, 1967. Adams' name will be added to the Astronauts Memorial Foundation's Space Mirror along with that of Astronaut **Manley "Sonny" Carter**, who was killed last year in a plane crash. AMF founder and chairman **Alan Helman** said, "AMF is proud to honor both of these courageous men

by adding their names alongside the 14 other men and women who gave their lives in the exploration of space." The names will be added in mid-February when workers replace several panels that have cracked since the May 9 dedication of the national monument. [Beecken, FLORIDA TODAY, p. 1B, Jan. 23, 1992.]

BUSY FEBRUARY FOR KSC WORKERS

Kennedy Space Center Shuttle Launch Director **Robert B. Sieck** said today that next month will be "busy times for those that are still on the ground." The agenda features: the return to KSC of Discovery from its planned Edwards Air Force Base (CA) landing and the return to flight status of the Space Shuttle Columbia which returns from extensive modifications undergone the past few months in Palmdale, CA. On February 16, Atlantis will be rolled from its hangar to the Vehicle Assembly Building for mating with its external tank and solid rocket boosters; rollout is targeted for February 24 followed a month later (March 23) with launch. Endeavour, the newest Space Shuttle, will be rolled from OPF Bay 1 to the VAB in late February; the Orbiter will have its maiden launch in late April or early May. [Halvorson, FLORIDA TODAY, p. 4A, Jan. 23, 1992.]

January 23:

STS 45 PROCESSING: OPF BAY 2

In Orbiter Processing Facility Bay 2, technicians continue processing the Space Shuttle Atlantis. Work in progress includes: leak checks of the main propulsion system; servicing of the auxiliary power units with lube oil; installation of windows in the crew cabin and of heat shields around the main engines; testing of the communications system; functional testing of the orbital maneuvering system and reaction control system; configuring the payload bay for the STS 45 payloads. Scheduled work: ATLAS payload arrival set for January 25 whereupon it will be installed in the cargo bay; the Crew Equipment Interface Test with the STS 45 flight crew on February 1. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 23, 1992.]

ENDEAVOUR: PROCESSING STATUS

In OPF Bay 1, technicians are working on the following Endeavour activities: installation of the flight tires; preparations for a test of the flight control aerosurfaces; servicing of the potable water system; installation of the waste containment system; stowing of the Ku-band antenna; closure of the payload bay doors; tests of the main propulsion gaseous oxygen system; leak tests of the crew cabin; leak checks of the environmental control life support system; closeouts of the midbody; installation of tiles and thermal protection system operations. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 23, 1992.]

COLUMBIA IN PALMDALE, CA

The mock orbital maneuvering system pods are scheduled to be installed later this week. The tail cone is scheduled to be installed late this month or early next month. The extended duration Orbiter pallet is being stored in the VAB high bay 2 where it will be checked out for installation in Columbia's payload bay. Columbia is targeted for its return to Florida on February 8. There will be a two-day ferry flight from California to Florida beginning February 7. Columbia will be in OPF Bay 3 for STS 50 processing. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 23, 1992.]

January 24: **BUSH LAUNCHES ISY**

President **George Bush** today kicked-off International Space Year (ISY) - a year-long, worldwide celebration of space cooperation and discovery. Participating in the White House even were NASA Administrator **Richard H. Truly**, the crews of four of NASA's most recent Space Shuttle missions, ISY dignitaries, and students and teachers from the Young Astronaut Program. During ISY, 29 space agencies and ministries from around the world, 10 international organizations and the United Nations will celebrate the spirit of discovery and will work together to promote a new era of global cooperation and to increase knowledge of planet Earth. NASA has been designated by Congress as the lead U.S. agency responsible for developing and monitoring ISY events domestically and internationally. Dr. **Lennard A. Fisk**, NASA's Associate Administrator for Space Science and Applications, is the lead representative for the U.S. ISY initiative. In 1985, the late Senator **Spark Matsunaga** (D-Hawaii) proposed a 1992 International Space Year to commemorate the 500th anniversary of Columbus' discovering the New World and the 35th anniversary of the International Geophysical Year that ushered in the space age. Congress adopted ISY in 1986 and the United Nations General Assembly endorsed it in 1989. Today it has developed into a worldwide space activity. The U. S. International Space Year Association (US-ISY) was established with support from NASA to provide information on ISY events. US-ISY publishes a list of activities that can be obtained by writing US-ISY, 600 Maryland Avenue, SW, Suite 600, Washington, D.C., 20024, or by phoning 202/863-1734. [NASA/KSC NEWS RELEASE NO: 92-12, Jan. 24, 1992.]

DISCOVERY: SRBS ARRIVE AT HANGAR AF

The right hand STS 42 solid rocket booster arrived at Hangar AF this morning where it is being hoisted out of the water and into its stand. The Freedom Star and the left hand booster are due at Hangar AF this morning. Workers will wash down the boosters and safe them today and will take the weekend off. A thorough inspection will be conducted on Monday (January 27). The boosters will be disassembled and sent back to Thiokol (Brigham City, UT) for refurbishment. The forward and aft skirts will be refurbished at KSC by USBI. Discovery's landing at Edwards Air Force Base (CA) is scheduled for 11:06 a.m. EST. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 24, 1992.]

ATLANTIS: APUS SERVICED

The auxiliary power units of Atlantis have been serviced with lube oil; three windows have been installed in the crew cabin and functional tests of the orbital maneuvering system and reaction control system have also been completed by technicians preparing the Orbiter for its STS 45 mission in OPF Bay 2. Work in progress: leak checks of the main propulsion system; installation of heat shields around the main engines; cleaning of the payload bay; configuring of the payload bay for the STS 45 payloads. Work scheduled: ATLAS payload is scheduled to arrive at the OPF January 25 for installation in the payload bay; the Crew Equipment Interface Test with the STS 45 flight crew onboard is scheduled for February 1. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 24, 1992.]

ENDEAVOUR IN OPF BAY 1

In Orbiter Processing Facility Bay 1, Endeavour is being prepared for a test of its flight control aerosurfaces; Endeavour's maiden launch will be the STS 49 mission scheduled for late April or early May of this year. Other processing work in progress: installation of the waste containment system; preparing the hydraulic system for the flight control test;

preparations for the structural leak tests; stowing the Ku-band antenna; closure of the payload bay doors; tests of the main propulsion system; leak tests of the crew cabin; leak checks of the environmental control life support system; closeouts of the midbody of Endeavour; thermal protection system operations; test of the nose wheel steering system. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 24, 1992.]

COLUMBIA'S RETURN PREPARATIONS

The mock orbital maneuvering system pods are scheduled to be installed later this week; the tail cone is scheduled to be installed late this month or early next month. The extended duration Orbiter pallet is being stored in the VAB high bay 2 where it will be checked out for installation in Columbia's payload bay. Columbia is targeted to return to Florida on February 8. There will be a two-day ferry flight from California to Florida beginning February 7; Columbia will be in OPF Bay 3 for STS 50 processing. [KSC SHUTTLE STATUS REPORT, 11 a.m., Jan. 24, 1992.]

January 26: **DISCOVERY TO GET MAKEOVER**

First, it was Columbia; now, it's Discovery which is scheduled for extensive modifications which are expected to take some 222 days in a processing hangar. Kennedy Space Center Director **Robert L. Crippen** said, "It will be the same kind of things we did on Columbia." NASA plans to spend a total of $33 million refurbishing both Discovery and Atlantis. The expense of modifying Columbia in California came to approximately $24 million. **Chris Fairey** is in charge of modifying Discovery; "In any kind of vehicle, whether it's a plane or a car or whatever, you have to stop once in awhile and do maintenance." Managers are hoping that it will save time to do Discovery's overhaul at KSC. "There may not be many mission specific things you can do, but whatever you can do, it's to your advantage to do them here," according to Fairey. Among the 41 modifications planned for Discovery are: the installation of a drag chute, upgraded auxillary power units and an improved nosewheel steering system. [Banke, FLORIDA TODAY, pp. 10E & 9E, Jan. 26, 1992.]

January 27: **EXTRA DAY GIVEN TO DISCOVERY**

This morning, Shuttle managers decided to extend Mission STS 42 one extra day. The crew has conserved enough consumables to safely extend the flight which was originally scheduled to land on Wednesday. Landing is now planned on Thursday [January 30] shortly after 11 a.m. EST at Edwards Air Force Base (CA) on orbit 129. A post-flight assessment of the STS 42 solid rocket boosters is planned today at Hangar AF. Last week, workers washed and safed the boosters. The boosters will be disassembled and shipped back to Thiokol (Brigham City, UT) for refurbishment. The forward and aft skirts will be refurbished here by USBI. As the crew of Discovery prepared to extend their stay in space by one day, Mission Specialist Dr. **Norman E. Thagard** took on extra work to give fellow crewmember Dr. **Roberta L. Bondar** could relax. He said, "I've been here before. This is Roberta's first trip; give her a chance to look out the window." Thagard is making his fourth Shuttle flight and will have accumulated a record of more than 600 hours in space. [Banke, FLORIDA TODAY, p. 1A, Jan. 27, 1992, Banke, FLORIDA TODAY, p. 1A, Jan. 28, 1992, "Shuttle May Stay Aloft An Extra Day," USA TODAY, p. 3A, Jan. 27, 1992, "NASA Considers Extending Shuttle Mission," THE NEW YORK TIMES, p. A6, Jan. 27, 1992, KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 27, 1992, Banke, FLORIDA TODAY, p. 1A, Jan. 29, 1992, Banke, FLORIDA TODAY, p. 1A, Jan. 30, 1992, "Day Before Landing, Shuttle Crew Eases Up," THE NEW YORK TIMES, p. A7, Jan. 30, 1992.]

WILLIAM R. SCHINDLER, DEAD AT 64

The father of the Delta Program, **William R. Schindler,** died today at Loma Linda University Medical Center (Loma Linda, CA). He helped pioneer the Delta Program for NASA. In 1991, Schindler was awarded the Special Achievement Award of the National Space Club "for management of the evolutionary development of the Delta Program." He also received the NSC's Astronautics Engineer Award (1980) and NASA's Distinguished Service Award. [Bailey, FLORIDA TODAY, p. 9E, Feb. 2, 1992.]

LAUNCH RULES MAY EASE

This month, NASA began its final phase of "field mill" flight tests to study launch-related weather at its Florida launch site. "Field mills" are instruments that detect the presence of electric charges in the atmosphere. Results from earlier flights demonstrated that present weather rules fully protect space launch vehicles from triggered lightning hazards. However, there is strong evidence that a number of rules are overly conservative and potentially, could delay launches under weather conditions that do not pose any real lightning threats. A NASA Learjet from Langley Research Center (Hampton, VA) has been flown in the vicinity of NASA Kennedy Space Center, FL, and USAF launch facilities at Cape Canaveral, FL, collecting meteorological data and atmospheric electric field strength data. Seasonal data has been taken for two summer seasons and one previous winter season. The flight test series just underway, the last in the series, is planned for 8 weeks.

"In a limited number of cases to date," said **William Bihner,** NASA Airborne Field Mill Program Manager, "the weather was in violation of launch commit criteria as written, but we did not measure an electrical hazard aloft. It looks very promising that by the conclusion of the program we will be able to recommend changes to present launch commit criteria that will maintain launch safety while reducing launch restrictions." The set of criteria most likely to be relaxed are those that govern launches through or near cumulus clouds, large puffy clouds that appear most often in the spring or summer. The next best candidate for relaxation are those associated with layered clouds, seen most often in the winter. The layered cloud phenomena has the greatest impact on Space Shuttle and other rocket launches from the Kennedy Space Center and the USAF Eastern Test Range.

There are six natural and triggered lightning constraints that can delay a launch. Flight data was collected for each. The first rule prohibits a launch within 10 nautical miles of any type of lightning 30 minutes prior to launch. The second prohibits a launch through or near cumulus clouds, depending upon the combination of distance and temperature at the cloud top. The remaining rules deal with the intensity of the electric field as measured at the surface, the presence or absence of vertically continuous layers of clouds and the presence of disturbed weather (moderate or greater precipitation) or debris clouds associated with a thunderstorm. Safely opening the launch window even a little in the thunderstorm-prevalent Central Florida area could result in a significant reduction of lightning-related launch delays. Electrically charged clouds, believed to be lightning conducive, pass over the Cape Canaveral area more than 100 days each year, especially from May to September. A lightning strike to a vehicle can be triggered when the vehicle passes near a thunderstorm or even through an electric field left from a decaying thunderstorm. Components in the rocket or its payload can be damaged by the strike. A change in lightning rules will not occur immediately, Bihner said. Enough data must be collected to be considered statistically significant and the conclusions must

be scientifically validated, then Air Force and NASA officials will have to approve changes, he said. The process will be slow and deliberate because safety is involved, he added.

Funding for the joint NASA-Air Force Airborne Field Mill Program is provided by the NASA Headquarters Office of Space Flight, Washington, D.C., and the USAF Space Systems Division, Los Angeles. Participants in the field mill program are drawn from the USAF 45th Space Wing and three NASA centers. The Marshall Space Flight Center (Huntsville, AL) designed and fabricated the onboard electric field sensors and is responsible for data processing, archiving and analysis. Langley is providing the aircraft and all flight support. Kennedy is providing real-time weather data, aircraft guidance and real-time ground station support during data gathering flights. The aircraft is controlled from and data collected at the 45th Space Wing's Range Operations Control Center. [NASA/KSC NEWS RELEASE NO: 92-, Jan. 27, 1992.]

ATLANTIS: ATLAS PAYLOAD INSTALLED

The ATLAS payload has been installed in Atlantis in OPF Bay 2; pressure checks of the main landing gear tires have also been completed in preparation for the Orbiter's upcoming STS 45 mission. Work in progress: preparations for payload testing this week to verify connections between the Orbiter and ATLAS; tests of the main propulsion system and main engines; servicing of the ammonia system and the potable water system; installation of the heat shields around the main engines and the windows in the crew cabin; configuring the payload bay for the STS 45 payloads. Work scheduled: installation of the Shuttle Solar Backscatter Ultraviolet (SSBUV) payload into the payload bay tomorrow (January 28); ATLAS payload interface verification test this week; Crew Equipment Interface Test with the STS 45 flight crew on February 1. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 27, 1992.]

ENDEAVOUR: FCFR TEST

In Orbiter Processing Facility Bay 1, technicians have completed Endeavour's Flight Control Frequency Response Test and scheduled the installation of the Orbiter's drag chute. Work in progress: installation of the waste containment system; structural leak tests; tests of the main propulsion system; leak tests of the crew cabin; leak checks of the environmental control life support system; closeouts of the midbody; thermal protection system operations; test of the nose wheel steering system. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 27, 1992.]

COLUMBIA: KSC RETURN PREPARATIONS

The external tank for Columbia's STS 50 mission is scheduled to arrive in the KSC turn basin today. The tank will be transferred to its cell in the VAB. The mock orbital maneuvering system pods are scheduled to be installed for the ferry flight. The tail cone is scheduled to be installed later this week. Columbia is scheduled to return to Florida on February 8. Columbia will be processed for STS 50 in OPF Bay 3. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 27, 1992.]

January 28: **CHALLENGER ASTRONAUTS REMEMBERED**

At the annual Astronaut Memorial Ceremony (Titusville, FL), former astronaut and Grumman Technical Services President **Fred Haise** said that pushing back the frontiers

of space carries risk and the possibility of heartbreak. "That's why we're here today," he said. "But if the Challenger crew were with us, they would say, 'Press on, the price is worth it. Humans have been placed on this spacecraft Earth with the ability, uniquely, to leave it. I believe the ultimate destiny of the human race is to explore and populate other planets." Haise was lunar module pilot on the ill-fated Apollo 13 mission in 1969. "We did not want our failure to slow down or halt the quest, and I know the Challenger crew would feel the same," he said. At the close of the ceremony, the approximately 100 people in attendance placed flowers at the Astronaut Memorial which commemorates both the Challenger crew and those who died in the Apollo 204 fire January 27, 1967. [Fiorini, FLORIDA TODAY, Jan. 29, 1992.]

DISCOVERY: FLIGHT DAY 7

Discovery's landing and the end of its STS 42 mission is planned for Thursday (January 30) at 11:09 a.m. EST at Edwards Air Force Base (CA) on orbit 129. The STS 42 boosters are being prepared for disassembly and shipment back to Thiokol (Brigham City, UT) for refurbishment. The forward and aft skirts will be refurbished here by USBI. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 28, 1992, KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 29, 1992.]

ATLANTIS: AMMONIA SYSTEM SERVICED

Technicians in Orbiter Processing Facility Bay 2 have finished servicing the Orbiter's ammonia system. Work in progress: installing the Shuttle Solar Backscatter Ultraviolet (SSBUV) payload into the payload bay; preparations for payload testing this week to verify connections between the Orbiter and ATLAS and the SSBUV; tests of the main propulsion system and main engines; preparations to service the potable water system; installing heat shields around the main engines; configuring the payload bay for the STS 45 payloads. Work scheduled: ATLAS payload interface verification test this week; Crew Equipment Interface Test with the STS 45 flight crew on February 1. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 28, 1992.]

ENDEAVOUR: PROCESSING ACTIVITIES

Workers have installed the waste containment system in the Space Shuttle Endeavour. Other work in progress includes: structural leak tests of all areas of the Orbiter; tests of the main propulsion system; leak tests of the crew cabin; leak checks of the environmental control life support system; closeouts of the midbody; thermal protection system operations; test of the nose wheel steering system; installation of the drag chute. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 28, 1992.]

COLUMBIA: FERRY FLIGHT PREPARATIONS

The external tank for STS 50 arrived at Kennedy Space Center by barge yesterday (January 27) and was transferred to the checkout and storage cell in the Vehicle Assembly Building. The mock orbital maneuvering system pods are being installed this week in preparation for the ferry flight; the tail cone is scheduled to be installed later this week. Columbia will return to KSC on February 8 and begin processing activities for STS 50 in OPF Bay 3. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 28, 1992.]

January 29: **SSBUV INSTALLED ON ATLANTIS**

The Shuttle Solar Backscatter Ultraviolet (SSBUV) payload has been installed into the payload bay of Atlantis in preparation for its upcoming STS 45 flight. Work in progress: installing sleep stations in the middeck; preparations for payload testing this week to verify connections between the Orbiter and ATLAS and the SSBUV; tests of the main propulsion system and main engines; preparations to service the potable water system; installing heat shields around the main engines; configuring the payload bay for the STS 45 payloads. Work scheduled: ATLAS payload interface verification test tonight; Crew Equipment Interface Test with the STS 45 flight crew on February 1; frequency response test of the aerosurfaces next week; functional test of the landing gear next week. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 29, 1992.]

ENDEAVOUR: RADAR ALTIMETER TESTS

Tests of Endeavour's radar altimeter are underway in OPF Bay 1. Other work in progress includes: fit checks and installation of the waste containment system; structural leak tests of all areas of the Orbiter; tests of the main propulsion system; leak tests of the crew cabin; leak checks of the environmental control life support system; closeouts of the midbody; thermal protection system operations. [KSC SHUTTLE STATUS REPORT, 10 a.m., Jan. 29, 1992.]

January 30: **LC 39B READY FOR ENDEAVOUR**

Managers at Kennedy Space Center have decided that Launch Complex 39B will be ready to support the maiden voyage of Endeavour on mission STS 49 later this year. Pad 39B, one of two KSC Shuttle launch facilities, has undergone an estimated $3.5 million in modifications and repairs to the structure and associated payload handling facilities. The extensive work has been conducted over the past half year and will provide KSC again with two pads available for Shuttle launches. "We needed six months because of two primary modifications that were time drivers," said F. C. "Sonny" Jones, NASA Project Manager. One driver was the removal of the Payload Ground Handling Mechanism platform and replacement with the Clean Access Platform (CAP), along with the installation of a manrated CAP hoist system. The second modification was a complete rework of the Environmental Control System. This included the control system, control room and installation of a new reinforced cooling tower. A total of 51 modifications to Pad B were made. [NASA/KSC NEWS RELEASE NO: 13-92, Jan. 30, 1992.]

ATLAS 2 LAUNCH DELAYED WEEK

A fuel leak has delayed the launch of an Air Force Atlas 2 rocket with its military communications payload for at least a week. The launch was to have occurred January 31 at 6:30 p.m. The delay will move up the launch of an Air Force Delta 2 at Cape Canaveral Air Force Station. The Delta is expected to launch with a $65 military navigation satellite on February 3 between 6:46 p.m. and 7:18 p.m. ["Booster Problem Stalls Atlas Flight," FLORIDA TODAY, p. 2A, Jan. 28, 1992, "Atlas 2 Liftoff Put Off 1 Week," FLORIDA TODAY, p. 4A, Jan. 30, 1992.]

DISCOVERY LANDS AT EDWARDS

The Space Shuttle Discovery landed this morning at 11:07 a.m. at Edwards Air Force Base, CA; STS 42 concluded on orbit 129. Main gear touchdown was on runway 22 at mission elapsed time of 8 days, 1 hour, 14 minutes, and 45 seconds. Discovery's stay in California will be extended about one week while the Orbiter Columbia is ferried from Palmdale, CA, to Florida. Discovery's ferry flight to Florida is scheduled to begin February 11 and conclude at Kennedy Space Center the following day. KSC's Shuttle recovery team is at the Dryden Flight Research Facility to prepare the Orbiter for the return to Florida; later today, Discovery will be towed to the Mate Demate Device where technicians can gain access to various areas of the vehicle. Hydrolasing activities are underway at Hangar AF to prepare the STS 42 boosters for disassembly and shipment back to Thiokol (Brigham City, UT) where they will be refurbished. The forward and aft skirts will be refurbished at the space center by USBI. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., Jan. 30, 1992, Banke, FLORIDA TODAY, p. 1A, Jan. 31, 1992.]

ORBITER/PAYLOAD CONNECTIONS TESTED

Technicians in Orbiter Processing Bay 2 are currently testing the connections between Atlantis and ATLAS and the Orbiter and the SSBUV. Also underway are leak and functional tests of the auxiliary power units; functional testing of the external tank doors; installation of sleep station pallets in the middeck; tests of the main propulsion system and main engines; servicing of the potable water system; installation of heat shields around the main engines. Scheduled work: Crew Equipment Interface Test with the STS 45 flight crew in attendance on February 1; a frequency response test of the aerosurfaces next week and a functional test of the landing gear next week. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., Jan. 30, 1992.]

ENDEAVOUR: LEAK CHECKS COMPLETED

Leak checks of Endeavour's main propulsion system have been completed during processing of the Orbiter for its maiden voyage, STS 49. Work in progress: tests of the radar altimeter; fit checks of the middeck lockers; installation of panels in the middeck; structural leak tests of all areas of the Orbiter; tests of the main propulsion system; leak checks of the environmental control life support system; closeouts of the midbody; thermal protection system operations. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., Jan. 30, 1992.]

January 31:

DISCOVERY: TILE INSPECTIONS

Middeck experiments have been removed from Discovery and inspections of the Orbiter's thermal protection system are underway now that the vehicle has been towed to the Mate Demate Device at the Dryden Flight Research Facility in California. Drying operations on Discovery's three main engines are underway. A nominal two-day ferry flight from California to Florida will bring Discovery into KSC on February 12; several refueling stops are required due to the weight of the International Microgravity Laboratory payload which remains in the Orbiter's cargo bay. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., Jan. 31, 1992.]

ATLANTIS: APU TESTS FINISHED

Leak and functional tests of Atlantis' auxiliary power units have been completed by technicians in OPF Bay 2 at Kennedy Space Center. Work in progress: functional tests

of the external tank doors; installation of sleep station pallets; interface connection verifications; main engine and main propulsion system tests and servicing of the potable water system. Scheduled work includes: CEIT, frequency response test of aerosurfaces and functional tests of the landing gear. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., Jan. 31, 1992.]

OPF BAY 1: ENDEAVOUR PROCESSING

In OPF Bay 1, technicians are conducting electrical redundancy tests of Endeavour's orbital maneuvering system. Other work in progress includes: connections of fluid lines to auxiliary power unit no. 1; tests of the radar altimeter; fit checks of the middeck lockers; installation of panels in the middeck; structural leak tests of all areas of the Orbiter; tests of the main propulsion system; leak checks of the environmental control life support system; closeouts of the midbody; thermal protection system operations. Leak tests of the crew module are also scheduled. Meanwhile, work on Columbia is nearing completion to ready the vehicle for the ferry flight from California to KSC on February 8. Columbia is scheduled to be processed for the STS 50 mission in OPF Bay 3. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., Jan. 31, 1992.]

February 2: DELTA LAUNCH SET FOR 4TH

The Air Force will launch its first Delta 2 rocket in seven months on February 4. The launch window extends from 6:46 p.m. until 7:18 p.m. **Anne McCauley**, spokeswoman for Delta's manufacturer McDonnell Douglas Space Systems Co. said, "Our launch team is anxious and ready." The Delta will carry the 12th Navstar GPS satellite; these satellites aid navigation U. S. ships, submarines, jets, bombers and tankers and guide troop maneuvers throughout the world. [Halvorson, FLORIDA TODAY, p. 7A, Feb. 2, 1992; Halvorson, FLORIDA TODAY, p. 10E, Feb. 2, 1992.]

[] KUMERFIELD/KRAFT WIN SILVER SNOOPY

Air Force Majors **Thomas Kraft** and **Jack Kumerfield** have been awarded the Silver Snoopy by Astronaut **Frederick Gregory**. ["Outstanding Service," FLORIDA TODAY, p. 9E, Feb. 2, 1992.]

February 3: COLUMBIA'S MODIFICATIONS

The Space Shuttle Columbia is scheduled to return to the Orbiter fleet at Kennedy Space Center on February 8, completing a six-month modification period at Shuttle manufacturer, Rockwell International (Palmdale, CA). "We're pleased with the work Rockwell has performed to upgrade Columbia. A lot of cooperation between all parties involved was necessary to bring us to this point and we are upbeat," said **Bascom Murrah**, Columbia's Processing Manager. The senior Space Shuttle will leave Palmdale (CA) aboard the Shuttle Carrier Aircraft (SCA) on February 7 and land the following day of the Shuttle Landing Facility at Kennedy Space Center. One of the more significant changes made to Columbia will allow the Orbiter to fly longer missions, up to 16 days. The experience gained from these longer flights will be used to planned crew activities aboard Space Station Freedom. Changes made to equip the Orbiter for extended flight include increasing the vehicle's power and waste collection capacity, adding a regenerating system for removing carbon dioxide from the crew cabin atmosphere, installing two additional nitrogen tanks for the crew cabin atmosphere, and adding extra middeck lockers.

A pallet of extra tank sets to hold liquid hydrogen and liquid oxygen reactants is required to support the extended Shuttle missions; these four tank sets, in addition to the four already onboard Columbia, will supply the Orbiter's fuel cells which produce electrical power and drinking water. Called the Extended Duration Orbiter (EDO) pallet, this pallet was built to hold the four oxidizer and four fuel tanks required for longer space missions. It arrived at Kennedy Space Center the second week of January (1992) and is being processed and tested in a designated area of the Vehicle Assembly Building. It will be mounted near the rear bulkhead of the Orbiter's payload bay and connected to Columbia's systems. Approximately fifty (50) other modifications were made to Columbia, including improved nose wheel steering capability, carbon brakes, improved auxiliary power units and installation of five new general purpose computers. Developmental flight instrumentation that is no longer required was removed. In addition, Columbia was outfitted with a drag chute pod and its thermal protection system was enhanced. As part of periodic maintenance, Columbia underwent the most extensive structural inspections performed on an Orbiter to date. Visual and borescope inspections were performed to identify any fatigue, stress or cracks in the Orbiter's structure. This trip marked the

second time Columbia was shipped to the manufacturing plant for modifications since it inaugurated NASA's Space Shuttle Program eleven years ago with the launch of STS 1 on April 12, 1981.

Hundreds of modifications were made to Columbia during an 18-month period in 1984-85, primarily to add improved components, to structurally beef up the Orbiter and to remove some of the development flight instrumentation required to fully understand the operation of the new Shuttle. In 1989, an additional 250 modifications were made to Columbia as part of the return-to-flight improvements. Following its last flight, STS 40, Columbia was prepared for shipment to California; the Orbiter was ferried to the Rockwell plant in Palmdale on August 9, 1991, where it has been ever since. Preparations for Columbia's next flight - STS 50 in June - will take place in Orbiter Processing Facility Bay 3. The 15-foot-wide EDO pallet will be installed and tested in the Orbiter's payload bay. Major components of the Orbiter will be installed in the OPF, including both orbital maneuvering system pods, the forward reaction control system and the three main engines. The United States Microgravity Laboratory, primary payload for Mission STS 50, will be installed in Columbia's payload bay and tested in the OPF. Launch of STS 50 will be from Launch Complex 39A. [NASA/KSC NEWS RELEASE NO. 15-92, Feb. 3, 1992.]

FUEL LEAK DELAYS DELTA LAUNCH

"There's no doubt in my mind that it will be at least a week and probably more. We're putting together a plan, and it will be later this week before we're ready to say when we can fly," said the commander of the 1st Space Launch Squadron Lt. Col. Randy Moyer about the delay in launching the Delta 2 rocket at Cape Canaveral Air Force Station. The postponement was due to a toxic fuel leak in the second stage of the Delta 2. [Banke, FLORIDA TODAY, Feb. 4, 1992.]

DISCOVERY AT DRYDEN

Work is progressing well at Dryden Flight Research Facility (CA) to prepare the Space Shuttle Discovery for its return trip to Florida. Residual hypergolic propellant was offloaded this weekend. Today, the tail cone is scheduled to be installed and all areas of the vehicle will be buttoned up. Booster disassembly operations are continuing at Hangar AF on the Cape Canaveral Air Force Station. The segments will be sent to their Thiokol manufacturing plant (Brigham City, UT) where they will be refurbished. The aft skirts are being removed today. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., Feb. 3, 1992.]

ATLANTIS: CEIT COMPLETED

In OPF Bay 2, STS 45 crew members have participated in a successful Crew Equipment Interface Test (CEIT); functional tests of the external tank doors and the close out of wings and flipper doors for the Orbiter's transfer to the VAB have also been completed. Work in progress: interface verification tests between the ATLAS and the SSBUV payloads; functional test of the radiator latch; installing sleep station pallets in the middeck; tests of the main propulsion system and main engines; servicing of the potable water system; removal of APU No. 1; closing out of the aft compartment. Scheduled work: frequency response test of the aerosurfaces later this week; functional test of the landing gear next week; transferring the Orbiter to the VAB, i.e., rollover, next week. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., Feb. 3, 1992.]

ENDEAVOUR: CREW MODULE LEAK TESTED

In OPF Bay 1, the crew module has been successfully tested for leaks and APU No. 1 has been installed in Endeavour. The radar altimeter has also been tested. Work in progress: installation of window no. 6; electrical redundancy tests of the orbital maneuvering system; fit checks of the middeck lockers; installation of panels in the middeck; structural leak tests of all areas of the Orbiter; tests of the main propulsion system; leak checks of the environmental control life support system; closeouts of the midbody; thermal protection system operations. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., Feb. 3, 1992.]

February 4:

ATLAS-1/SSBUV: INTERFACE TESTS

Interface verification tests between the ATLAS and SSBUV payloads aboard Atlantis are being conducted in OPF Bay 2. Other work in progress includes: preparations for the flight control test of the aerosurfaces; servicing of the potable water system; closing out of the aft compartment. Work scheduled: frequency response test of the aerosurfaces later this week; functional test of the landing gear next week; transferring the Orbiter to the Vehicle Assembly Building next week. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., Feb. 4, 1992.]

ENDEAVOUR: TEXT/GRAPHICS SYSTEM INSTALLED

Workers have completed installing Endeavour's text and graphics system aboard the Orbiter in OPF Bay 1. Work in progress includes: installation of window no. 6; configuring the aft flight deck for the STS 49 mission; structural leak tests of all areas of the Orbiter; tests of the main propulsion system; leak checks of the environmental control life support system; installation of the waste containment system; closeouts of the midbody; thermal protection system operations. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., Feb. 4, 1992.]

LIFE SCIENCES RESEARCH DOOMED AT KSC

The Director of Medical Operations at Kennedy Space Center, Dr. **Paul Buchanan**, said today that life sciences research at KSC will be shut down by October 1. Buchanan said as many as 33 jobs and a source of additional income for dozens of other KSC employees will be cut. He said only projects directly related to Shuttle operations would continue. "Everything else goes," he said. [Banke, FLORIDA TODAY, Feb. 5, 1992.]

February 5:

EMPLOYMENT: 1000 CUTS BY 1996

NASA officials said today that by 1996 as many as 1,000 Shuttle processing jobs may be cut at Kennedy Space Center; the cuts would save $550 million. Of the thousand, about 400 would be cut by October 1, according of Director of Shuttle Operations and Management **Jay Honeycutt**. Of the remaining 600 potential cuts, current plans project the elimination of about 150 slots per year for each of the following four years. Nationwide, NASA plans to cut Shuttle work forces by 5,000 persons during the next five years. Local cuts will be made in the work forces of Lockheed Space Operations Co. and its subcontractors. Lockheed spokesman **J. B. Klump** said that attrition may account for some of the reduction; the 1,000 jobs to be eliminated are in addition to the 400 cut in 1991. KSC Launch Director **Robert B. Sieck** said, "We won't sacrifice safety. If we're not able to do it, the impact will be schedule only." The cuts in Shuttle employment may be

offset in part by the expected 650 new hires at KSC to work on the Space Station Program; 75 persons will be hired in 1992. [Banke, FLORIDA TODAY, p. 1A, Feb. 6, 1992, Date, THE ORLANDO SENTINEL, pp. A-1 & A-4, Feb. 5, 1992.]

ATLANTIS: LANDING GEAR TESTED

A functional test of Atlantis' main landing gear has been completed in OPF Bay 2. Work in progress: leak tests of the main engines; rerouting a cable for the GRILLE spectrometer, one of the ATLAS experiments; preparations for the flight control test of the aerosurfaces and to service the potable water system; closing out the Orbiter's midbody and aft compartment. Work scheduled: frequency response test of the aerosurfaces later this week; rolling the Orbiter over to the VAB next week. [KSC SHUTTLE STATUS REPORT, 11:00 a.m., Feb. 5, 1992.]

ENDEAVOUR: WASTE SYSTEM INSTALLED

The waste containment system has been mechanically installed aboard Endeavour during processing of the fleet's newest Orbiter in OPF Bay 1. Work in progress: hooking up the waste containment system; leak and functional tests of the auxiliary power units; configuring the aft flight deck for the STS 49 mission; tests of the main propulsion system and of the environmental control life support system; closeouts of the midbody and wings and thermal protection system operations. [KSC SHUTTLE STATUS REPORT, 11:00 a.m., Feb. 5, 1992.]

CARTER/ADAMS ADDED TO MEMORIAL

While the new Astronauts Memorial is closed three weeks for repairs, two new panels will be added to the monument to recognize the late **Manley "Sonny" Carter** who died last year in a commuter airplane crash and Air Force Pilot **Michael J. Adams**, who died in a November 1967 X-15 crash. National Transportation Safety Inspectors cited faulty propeller parts in the accident which took Carter's life. ["Memorial Closed," FLORIDA TODAY, Feb. 5, 1992, "Faulty Propeller Parts Cited in Astronaut's Plane Crash," FLORIDA TODAY, p. 2A, Feb. 4, 1992.]

February 6: **WEATHER DELAYS ATLAS-2 LAUNCH**

Windy weather has forced the postponement until February 8 of the launch of an Atlas-2 rocket from Cape Canaveral Air Force Station. The launch will mark the first mission of the Atlas-2 for the Air Force, according to spokeswoman **Terri Bracher**. The rocket will carry the first military satellite in the Defense Satellite Communication System network; it will replace an aging satellite already in orbit. [Halvorson, FLORIDA TODAY, p. 1A, Feb. 7, 1992, Date, THE ORLANDO SENTINEL, Feb. 6, 1992.]

WEATHER STALLS COLUMBIA RETURN

The Space Shuttle Columbia's planned return to Kennedy Space Center may be delayed by inclement weather in California, according to KSC spokeswoman **Lisa Malone**. Rain has the potential of harming the Orbiter's delicate thermal protection system. Columbia has been bolted to its 747 Shuttle Carrier Aircraft for the ferry flight to Florida. ["Rain Might Douse Shuttle's Return Plan," [FLORIDA TODAY, p. 8A, Feb. 7, 1992.]

ATLANTIS: ROLLOVER SCHEDULED

Atlantis will be rolled over from OPF Bay 2 to the Vehicle Assembly Building next week for mating with its STS 45 external tank and solid rocket boosters. Work in progress: test of a replaced cable for the GRILLE spectrometer - an ATLAS experiment; replacement of the rudder speed brake thermal clip; preparations for the flight control test of the aerosurfaces; closing out the Orbiter's midbody and aft compartment. [FLORIDA TODAY, p. 8A, Feb. 7, 1992.]

ENDEAVOUR: TESTS UNDERWAY/OPF BAY 1

Work in progress upon Endeavour includes: a functional test of the external tank doors; installation of the drag chute; hooking up the waste containment system; leak and functional tests of the auxiliary power units; configuring the aft flight deck for the STS 49 mission; tests of the main propulsion system and of the environmental control life support system. [FLORIDA TODAY, p. 8A, Feb. 7, 1992.]

February 7:

ATLANTIS: CABLE REPLACEMENT

Workers in Orbiter Processing Facility Bay 2 have successfully retested a replaced cable for the GRILLE spectrometer, one of the ATLAS experiments which are Atlantis' prime STS 45 cargo. The Orbiter's rudder speed brake thermal clip has also been replaced. Work in progress: cleaning and inspecting the cargo bay; stowing the Ku-band antenna for flight; preparations for the flight control test of the aerosurfaces; closing out the Orbiter's midbody and aft compartment. Work scheduled: closing the payload bay doors for flight tomorrow night (February 8); functional test of the galley Sunday night; flight control test of the aerosurfaces Sunday; transferring the Orbiter to the Vehicle Assembly Building on Wednesday (February 12) for mating with the external tank and solid rocket boosters; rollout to Launch Complex 39A targeted for February 19. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 7, 1992.]

ENDEAVOUR: ET DOORS TESTED

Workers in OPF Bay 1 have tested Endeavour's external tank doors. Work in progress includes: installation of the drag chute; leak and functional tests of the auxiliary power units; configuring the aft flight deck for the STS 49 mission; tests of the main propulsion system and of the environmental control life support system; structural leak tests. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 7, 1992.]

February 8:

SILVER SNOOPY FOR AKE

Jeffrey Ake, an employee of Boeing Aerospace Operations Inc., has been awarded a "Silver Snoopy" by NASA astronaut **James H. Newman**. Boeing General Manager **Dean Helling** said, "Jeff [Ake] played a key role in the hydrogen leak detection investigation." Helling added, "It takes a large team of people to put America in space. Jeff is a symbol of someone who made the extra effort on behalf of the space program." ["Boeing Employee Wins 'Silver Snoopy'," FLORIDA TODAY, p. 9E, Feb. 9, 1992.]

ATLAS 2 LAUNCH SCRUBBED, AGAIN

A problem with the Atlas-2's guidance system and a stuck valve caused the second attempt to launch the rocket to be scrubbed; current plans call for a Sunday (February

9) launch during a window which extends from 6:31 to 7: 43 p.m. Air Force Captain **Ken Warren** said, "We think we've got some resolution of the problem. We'll have meetings this morning [February 9] looking at the situation, and that's when we'll decide if it's ready to go." The first launch attempt was scrubbed due to high winds at Launch Complex 36A at Cape Canaveral Air Force Station. [Halvorson, FLORIDA TODAY, p. 1A, Feb. 9, 1992.]

[] **WEATHER DELAYS COLUMBIA RETURN**

Bad weather in the southwestern United States caused the cancellation of Columbia's first leg of its ferry flight home to Kennedy Space Center. The takeoff from Rockwell International's Palmdale, CA, plant is scheduled for February 9 at 10 a.m. The Orbiter and its Shuttle Carrier Aircraft is expected to arrive at KSC's Shuttle Landing Facility at about mid-day February 10. Columbia's next mission - STS 50 - will be the first long-duration flight and it is scheduled to begin on June 3. [Halvorson, FLORIDA TODAY, p. 2A, Feb. 9, 1992.]

February 9: **COLUMBIA RETURNS TO KSC**

Columbia returned home to Kennedy Space Center at 6:08 p.m. after a one-day, cross-country ferry flight. "It's great, said **Grant Cates**, Columbia's Vehicle Manager at KSC. "We're real pleased." Among the modifications made to the oldest Orbiter: a drag parachute added to make landings safer and increase chances of landing at KSC; a backup nosewheel steering system; equipping the Orbiter to stay in orbit up to 28 days, four times the average length of Shuttle missions so far. [Banke, FLORIDA TODAY, p. 1A, Feb. 10, 1992; Halvorson, FLORIDA TODAY, p. 1A, Feb. 9, 1992.]

February 10: **ATLAS: THIRD TRY THE CHARM**

On its third attempt, the Air Force successfully launched its 15-story Atlas 2 rocket at 7:41 p.m. tonight. The launch had originally been set for 6:30 p.m., but a system malfunction delayed the liftoff. "Right now I'm the happiest colonel in the United States Air Force," said Col. Steve Purdy, Mission Director and Director of the DSCS Program. "We got off a superb launch." Tonight's was the first launch of an Atlas 2 rocket; the first launch of a new series of military communications systems and the first launch of an Atlas from LC 36A since May 19, 1983, when an Atlas-Centaur carrying an Intelsat-5 communications satellite was launched. [Banke, FLORIDA TODAY, p. 3A, Feb. 10, 1992, Halvorson, FLORIDA TODAY, p. 2A, Feb. 11, 1992; Date, THE ORLANDO SENTINEL, Feb. 11, 1992.]

[] **COLUMBIA PROCESSING FOR STS 50 UNDERWAY**

Columbia, just returned from California, was towed today into OPF Bay 3 to be processed for its June STS 50 mission involving the Spacelab module. The Shuttle Carrier Aircraft which bore Columbia to KSC has returned to California for the ferry flight of Discovery which landed at Edwards Air Force Base on January 30. NASA has only one set of specially-made doors which cover portions of an Orbiter's underside and allow the vehicle to be bolted to the transport plane. For these reasons, NASA can conduct only one ferry flight at a time. [Banke, FLORIDA TODAY, p. 2A, Feb. 11, 1992.]

February 11: **ATLANTIS: GALLEY TESTS**

In OPF Bay 2, technicians processing Atlantis for STS 45 have tested the vehicle's galley, completed strongback removal; closed the Orbiter's payload bay doors and finished

thermal protection system water proofing. Work in progress: preparations for power down later today; aft closeouts; structural leak checks and positive pressure checks. Work scheduled: weight and center of gravity evaluations; positioning of Orbiter transporter for mating; rolling Atlantis over to the Vehicle Assembly Building on February 13 at 8:00 a.m. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 11, 1992.]

ENDEAVOUR: STRAY VOLTAGE CHECKS

In OPF Bay 1, technicians have completed stray voltage checks on Endeavour in preparation for its STS 49 mission in April. Workers have also installed nose landing gear tires and completed flipper door closeouts. They are conducting water system checks and external tank door functional tests. Installation of the Orbiter's drag chute is underway, too. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 11, 1992.]

COLUMBIA: STS 50 PROCESSING UNDERWAY

Having been rolled from the Shuttle Landing Facility to OPF Bay 3, the Space Shuttle Columbia is now undergoing processing for its June STS 50 mission in which it will take the United States Microgravity Laboratory into space. The Orbiter has been positioned, jacked and leveled and readied for weight and center of gravity evaluations. Work in progress: removal of doors to gain access to aft and forward compartments; removal of ferry flight tail cone. Work scheduled: power up operations and opening payload bay doors, set for February 14. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 11, 1992.]

DISCOVERY: DELAYED AT DRYDEN

Discovery could not be mated with the 747 Shuttle Carrier Aircraft as scheduled yesterday due to the intense rain in the southern California region. Mating operations will resume when the rain subsides sufficiently to allow engineers to attach the aft compartment ferry flight doors. The earliest possible departure from Dryden is Wednesday morning with a tentative arrival at Kennedy Space Center set for February 13. Another 24 hour weather delay is possible, however, as rains are forecast to continue throughout today. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 11, 1992.]

February 12: **TRULY RESIGNS**

Richard H. Truly resigned today as NASA Administrator. "Frankly it wasn't what I had planned. It's a situation where the president decided...to make a change," Truly said. The Administrator will stay on the job until April 1. **John Logsdon**, Head of Space Policy Studies at George Washington University said, "This clears the deck for a NASA management committed to the kind of space program that the White House wants to put in place. Truly was fighting a kind of rear guard action for the kind of program he thought the country should have." Former NASA Administrator **Thomas O. Paine** said that he was "taken completely by surprise. I had rather thought that we on the Augustine commission had served as a bridge between the two sides [White House and NASA]," he said, and "as a result had cooled some of the friction." [Holton, THE ORLANDO SENTINEL, pp. A-1 & A-10, Feb. 13, 1992; Hoversten, USA TODAY, p. 3A, Feb. 13, 1992; Halvorson and Banke, FLORIDA TODAY, p. 1A, Feb. 13, 1992; Eisler and Lunner, FLORIDA TODAY, pp. 1A-2A, Feb. 13, 1992; Sawyer, THE WASHINGTON POST, pp. A1-A44, Feb. 13, 1992; Eisler and Banke, FLORIDA TODAY, p. 4A, Feb. 14, 1992; Halvorson, FLORIDA TODAY, p. 1A, Feb. 15, 1992; Leary, THE NEW YORK TIMES, p. 7, Feb. 15, 1992; Holton, THE ORLANDO SENTINEL, pp. A-1 & A-5, Feb. 20, 1992.]

TRULY LETTER OF RESIGNATION

February 10, 1992

Dear Mr. President:

It is with the deepest regret that I submit this letter of resignation as the Administrator of NASA. As we discussed when we met today, and because NASA is without a Deputy, I will remain until April 1.

This action will conclude almost 37 years of continuous military and government service for me. I have been unbelievably privileged to have had so many challenging assignments in aviation, space flight, military command and public administration over these years. In our nation's space business, I have enjoyed jobs in every corner of it; civilian and military, highly classified and open, flight and management.

In the last six years since I arrived to join the NASA leadership just after the **Challenger** tragedy, I have watched the talented men and women of this elite agency turn heartbreak and disarray into the impressive achievements and superb organization of today. With 20 safe and successful Shuttle flights in the past 40 months, scientific discoveries pouring in, **Space Station Freedom** on track, and our wind tunnels testing the airframes and spacecraft of tomorrow, they deserve to be very, very proud. With your support, their opportunities to inspire America's people and drive our country's competitiveness are boundless. Their achievements result from working daily in a fishbowl world of difficult and exacting tasks, tough judgments and carefully balanced risks; not an endeavor which some would have you think has quick, brilliant and easy solutions.

I think that the job of leading these people is the best one in Washington, and I am proud to have had that privilege. Cody and I particularly want to thank you and Barbara for the personal times you have shared with us over the years.

Sincerely,

Richard H. Truly
Administrator
Vice Admiral, U.S. Navy (Ret.)

[Letter from Richard H. Truly to President George Bush, Feb. 10, 1992; SEE ALSO: Letter from President Bush to NASA Administrator Truly, Feb. 12, 1992; "Bush Puts NASA In A Bind," THE ORLANDO SENTINEL, p. A-8, Feb. 18, 1992.]

CRIPPEN STATEMENT ON TRULY RESIGNATION

New Kennedy Space Center Director **Robert L. Crippen** issued the following statement concerning Administrator Truly's resignation: "**[Richard H.] Truly** is an outstanding leader and a close friend. He has made immeasurable contributions to the nation's space program from his time as an astronaut through his tenure as Administrator. NASA is a stronger, more vigorous agency as a result of Dick's leadership and we will continue to build on the strong foundation he has established." [CRIPPEN STATEMENT, KSC Newsroom, Feb. 13, 1992; Sawyer, THE WASHINGTON POST, pp. A1-A44, Feb. 13, 1992.]

UNIVERSITY OF FLORIDA WINS KSC CONTRACT

The University of Florida's College of Medicine has been awarded a $283,070 contract to provide emergency medical physicians at Kennedy Space Center during Space Shuttle launches and landings. This is the renewal of an agreement signed originally in 1980. The four university physicians, who are uniquely skilled trauma specialists, will work with and enhance the capabilities of the KSC medical staff who are located throughout the space center during launch and landing operations. If a mishap were to occur during launch or landing, two of the university physicians and KSC medical personnel would travel in a triage van to the site of the accident to treat and stabilize any of the astronaut crew who might be injured. The two remaining university physicians would be stationed at the Occupational Health Facility to assist NASA and EG&G Florida Inc. medical personnel as needed. Shands Hospital (University of Florida, Gainesville, FL) has been designated as the primary medical care facility for the astronauts. If injuries to crew members were severe enough to call for an emergency airlift, U.S. Air Force helicopters would transport the astronauts, under the care of Air Force physicians, to Shands if their conditions allowed the time necessary. Otherwise, they would be flown to a local hospital. [NASA/KSC Press Release No. 92-17, Feb. 12, 1992.]

WEATHER DELAYS DISCOVERY FERRY FLIGHT

Inclement weather has held up the return of Discovery from California. KSC spokesman **Mitch Varnes** said, "We'll just have to wait and see how it goes." Weather conditions will dictate the departure time; fog is expected to be in the area. Meanwhile, Atlantis has been towed from its processing hangar to the Vehicle Assembly Building to be mated with its external tank and solid rocket boosters. Rollout to Launch Complex 39A is expected next week. [Banke, FLORIDA TODAY, p. 4A, Feb. 14, 1992, Halvorson, FLORIDA TODAY, p. 7A, Feb. 15, 1992; Halvorson, FLORIDA TODAY, p. 1A, Feb. 16, 1992.]

February 13:

TRULY PREDICTS TOUGH TIME FOR NASA

NASA Administrator **Richard H. Truly** predicted "rough seas and turbulent times" ahead for the space agency. "What happens on April 2? Well, the truthful answer is I'm not sure. Any time leadership changes in an organization, it can be a time of rough seas and turbulent times. In the Navy when you're entering very tough situations and rough seas, there's a saying called 'steady as she goes.' That's what I'd like to impart to you today," he said to agency employees. [Eisler and Banke, FLORIDA TODAY, p. 4A, Feb. 14, 1992; "Ouster of Truly Might Be Big Blow to NASA," FLORIDA TODAY, p. 8A, Feb. 14, 1992; Holton, THE ORLANDO SENTINEL, Feb. 14, 1992.]

February 14:

ATLANTIS TRANSFERRED TO VAB

Yesterday, Atlantis was transferred from OPF Bay 2 to the Vehicle Assembly Building; first motion occurred at about 9:30 a.m. and the vehicle was in the VAB transfer aisle at 10:10 a.m. Work in progress: hard mate operations to attach the Orbiter to its external tank; tail service mast umbilical mates between the vehicle and the mobile service platform. Monoball umbilical connections are scheduled; rollout to Launch Complex 39A is set for February 20. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 14, 1992.]

[] **ENDEAVOUR: DRAG CHUTE INSTALLED**

In OPF High Bay 1, technicians have installed a drag chute in the Space Shuttle Endeavour and placed a camera in the vehicle's midbody section. Work in progress: potable water system checks; external tank door functional tests; TACAN installations; flight deck work and checkouts; midbody and wing closeouts; installation of drag chute door; thermal barrier work; auxiliary power unit heater checks. Technicians have also scheduled tests of Endeavour's landing gear functions. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 14, 1992.]

[] **COLUMBIA: POWER ON**

Workers in OPF High Bay 3 have completed cleaning Columbia's aft compartment and installed strongbacks on payload bay doors. Work in progress: preparations to open the vehicle's payload bay doors and removal of the last ferry kit items. Power on operations are scheduled. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 14, 1992.]

[] **DISCOVERY MATED FOR FERRY FLIGHT**

The Orbiter was mated to its 747 Shuttle Carrier Aircraft last night at about 11:00 p.m., EST. Managers at Dryden hope to fly Discovery and the 747 to Biggs Army Air Field (El Paso, TX) for a refueling stop. If weather permits, the vehicle may continue on to Kelly Air Force Base (San Antonio, TX) where it will remain overnight. The trip will continue February 15 with another refueling stop at Columbus Air Force Base (Columbus, MS). Columbia will most likely remain there through the night though it may be carried as far east as Eglin Air Force Base (Eglin AFB, FL). At this point it is unlikely the Orbiter will arrive back at Kennedy Space Center before midday on February 16. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 14, 1992.]

February 16: **29TH SPACE CONGRESS LINEUP**

New Kennedy Space Center Director **Robert L. Crippen** will make the keynote address at the 29th annual Space Congress in Cocoa Beach, FL, this year. Sponsored by the Canaveral Council of Technical Societies, the speakers will address topics including Department of Defense space operations, Space Shuttle operations and payloads, space education and plans for the space station and trips to the Moon and Mars. This year's Space Congress will feature the following speakers: [See Table next page.]

SPEAKER	POSITION
ROBERT L. CRIPPEN	DIRECTOR, KENNEDY SPACE CENTER
BRIG. GEN. JIMMEY MORRELL	COMMANDER, 45TH SPACE WING, PAFB
RICHARD KOHRS	DIRECTOR, SPACE STATION FREEDOM, NASA
LT. GEN. EDWARD BARRY JR.	COMMANDER, AIR FORCE SPACE SYSTEMS DIVISION (LOS ANGELES, CA)
LT. GEN. THOMAS MOORMAN JR.	COMMANDER, AIR FORCE SPACE COMMAND, PETERSON AFB (CO)
BREWSTER H. SHAW JR.	DEPUTY DIRECTOR, SPACE SHUTTLE OPERATIONS, KSC
ROBERT BROWN	DEPUTY ASSOCIATE ADMINISTRATOR, OFFICE OF HUMAN RESOURCES & EDUCATION, NASA
STEVEN HAWLEY	ASSOCIATE DIRECTOR, AMES RESEARCH CENTER (MOFFETT FIELD, CA)
MICHAEL GRIFFIN	DIRECTOR, OFFICE OF EXPLORATION, NASA
JAMES ROSE	DIRECTOR, OFFICE OF COMMERCIAL SPACE, NASA
GREGORY RECK	DIRECTOR, OFFICE OF SPACE TECHNOLOGY, NASA
HOWARD BENEDICT	EXECUTIVE DIRECTOR, MERCURY SEVEN FOUNDATION

["Stars of Space Program Head to 29th Annual Space Congress," FLORIDA TODAY, p. 9E, Feb. 16, 1992.]

LC 39B READY FOR ENDEAVOUR

"The pad [LC 39B] and all the supporting structures will be ready for Endeavour's launch," according to **S. W. "Buz" Brown**, Pad Manager for Lockheed Space Operations Co. "We've been able to accomplish some major modifications. It was a major effort across the board," added **Gale Christensen**, LSO Supervisor of Integrated Operations at LC 39B. [Halvorson, FLORIDA TODAY, p. 10E & 9E, Feb. 16, 1992.]

DELTA MISSION RESCHEDULED

A Delta rocket carrying a Navstar satellite is scheduled for liftoff from Cape Canaveral Air Force Station February 18 between 5:49 p.m. and 6:20 p.m. "It will be nice to see the Navstars flying again," said Air Force spokeswoman **Terri Bracher**. Navigational and contamination problems have grounded the Navstar launch program since last July. The

Delta mission was originally planned to begin February 4, but a fuel leak in the rocket's second stage delayed the liftoff. A faulty valve has been replaced; tests on the valve were completed this week. [Halvorson, FLORIDA TODAY, Feb. 13, 1992; Halvorson, FLORIDA TODAY, p. 10E, Feb. 16, 1992.]

DISCOVERY HOME AGAIN

Once again, Kennedy Space Center has on hand the full, four-Shuttle fleet. Discovery landed atop its 747 Shuttle Carrier Aircraft today at 1:44 p.m., after a flight from Kelly Air Force Base (San Antonio, TX). In the 747 were dozens of KSC workers who had been in California preparing the Orbiter for its ferry flight to Florida. **Chris Fairey**, KSC Manager of Orbiter Prelaunch Processing, said, "It's nice to see the team come back. They've been out in California for a long time. We're definitely glad to see Discovery home." Early Sunday, Columbia was flown to Columbus Air Force Base (Columbus, MS) for a refueling stop before continuing to Brevard County where the paired vehicles descended to 2,000 feet above the Atlantic Ocean; it flew north and south several times along the beach from KSC to Patrick Air Force Base to show off Discovery to crowds below. "I think it's nice to do it for the people because it's their airplane," said **Frank Marlow**, pilot of the SCA. Modifications to Discovery will be done at Kennedy Space Center to save money; Columbia has just returned from Palmdale, CA, where it underwent extensive modifications. Discovery will go to the VAB sometime in September to prepare it for an October launch, according to Fairey. Atlantis, meanwhile, is on target for its expected March 23 launch; the Orbiter is currently in the VAB for mating and testing and will be rolled to Launch Complex 39A on February 20. [Banke, FLORIDA TODAY, p. 3A, Feb. 17, 1992.]

February 18:

DELTA LAUNCHES TONIGHT

Despite stormy weather and heavy cloud clover the Air Force hoped to launch a Delta 2 rocket this evening between 5:49 p.m. and 6:20 p.m. bringing to an end a seven-month delay in launches of navigation satellites. The Delta would place into orbit the sixth Global Positioning System Satellite; the last one launched was July 3, 1991. The launch was postponed because of thick clouds over the launch pad, according to officials. On the 19th the window extends from 5:45 p.m. till 6:16 p.m.; Air Force meteorologists suggest, however, that the weather for the 19th is also forbidding - just a 10 percent chance of favorable conditions. Air Force rules prohibit launches under cloudy conditions because of the danger of lightning strikes. [Date, THE ORLANDO SENTINEL, p. A-4, Feb. 18, 1992; Banke, FLORIDA TODAY, p. 1A, Feb. 18, 1992; Halvorson, FLORIDA TODAY, p. 1A, Feb. 19, 1992.]

ATLANTIS: SHUTTLE INTERFACE TEST

The Shuttle Interface Test is underway in OPF Bay 2 where Atlantis is being prepared for its STS 45 mission; electrical connections between Atlantis and its external tank were completed February 15. Rollout to Launch Complex 39A is set for February 20. On February 27, the STS 45 crew will fly to KSC to take part in the Terminal Countdown Demonstration Test, looking to a launch on March 23. Atlantis will carry a Spacelab pallet of instruments designed to study Earth's atmosphere and the sun's effect on it. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 18, 1992; "KSC Workers Prepare Atlantis For Thursday's Trip to Launch Pad," FLORIDA TODAY, p. 2A, Feb. 18, 1992; Banke, FLORIDA TODAY, p. 5A, Feb. 19, 1992.]

ENDEAVOUR: FUEL CELLS HOOKED UP

In OPF Bay 1 where Endeavour is being processed for its maiden voyage - STS 49 - technicians have hooked up the Orbiter's fuel cells. Work in progress: tests of the Tacan system; leak and functional tests of the waste containment system; checks of the system for the extravehicular mobility units; configuring the aft flight deck for the STS 49 mission. A Crew Equipment Interface Test with the STS 49 flight crew is scheduled for this weekend. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 18, 1992.]

COLUMBIA: MOCK OMS POD REMOVAL

A functional test of Columbia's radiators is underway in OPF Bay 3 where technicians are also removing the mock right orbital maneuvering system pod and the main propulsion system temperature probes and check valves. The left mock OMS pod will be removed on February 20. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 18, 1992.]

DISCOVERY IN OPF BAY 2

Having finally returned from California, Discovery is now in Orbiter Processing Facility Bay 2 where preparations are underway to open the Orbiter's payload bay doors; remove the ferry flight tail cone and to power up the vehicle. Post-flight inspections and deservicing operations are also underway. On February 23, the International Microgravity Laboratory payload will be removed. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 18, 1992.]

February 20: **COHEN NAMED ACTING ADMINISTRATOR**

NASA Administrator **Richard H. Truly** today announced the appointment of **Aaron Cohen**, Director of the Johnson Space Center, as Acting Deputy Administrator. In making this announcement, Truly said, "Aaron Cohen's appointment, which has been closely coordinated with the White House, is one that pleases me greatly. Aaron's long experience as a top-flight engineer and manager will assist me greatly in the day-to-day operations of the agency until my departure on April 1, 1992, and also provide for continuity in the transition period as the President nominates and the Senate confirms a new Administrator and Deputy Administrator. **Roy S. Estess**, Director of the Stennis Space Center, MS, will remain in his temporary role as Special Assistant to the Administrator. Cohen has been Director of the Johnson Space Center since October 1986. He came to NASA in 1962 in the Apollo Spacecraft Program Office at the Manned Spacecraft Center (now Johnson Space Center). He served in various capacities at the center prior to being named Center Director. Upon completion of this assignment, Cohen will return to his permanent position as the JSC Director; during his absence, **Paul J. Weitz**, Deputy Center Director, will be Acting Director. ["Cohen Named Acting Deputy Administrator," NASA News Release No. 92-25, Feb. 20, 1992; Banke, FLORIDA TODAY, p. 1A, Feb. 21, 1992; Holton, THE ORLANDO SENTINEL, pp. A-1 & A-5, Feb. 21, 1992; "Truly's Forced Resignation Draws Fire in Congress," FLORIDA TODAY, Feb. 23, 1992.]

GLENN'S FLIGHT WAS THIRTY YEARS AGO

John Glenn is now a United States Senator (D-OH), but thirty years ago he became the first American to orbit the Earth. "It's a rare day that goes by that someone doesn't ask or comment about the space days," he says. "I've recalled it so often, almost daily, that it really seems to be that the whole thing was a month ago." He followed Russians **Yuri Gagarin** and **Gherman S. Titov** who were the first two persons to orbit the globe. "I'd like

to go up again. I already told them, and I was only half joking, that when they get around to doing a geriatric study, they've already got a baseline on me. I'm available." Glenn is 70 years old. ["Glenn's Story Keeps Him Flying High On Earth," THE ORLANDO SENTINEL, Feb. 20, 1992; Willette, FLORIDA TODAY, pp. 1A-2A, Feb. 20, 1992.]

ROLLOUT OF ATLANTIS

The Space Shuttle began the first leg of its STS 45 mission today when it was rolled out to Launch Complex 39A; the trip began at 11:04 p.m. February 19 and was concluded with a hard down status at the pad at 5:30 a.m. The rotating service structure was extended around the Orbiter. Bad weather prevented an even earlier rollout. A countdown demonstration test is set for February 26-27. At LC 39A, workers are making connections between the pad and the vehicle elements, preparing to power up Atlantis and to remove two auxiliary power units. KSC spokeswoman **Lisa Malone** said "We have a healthy amount of contingency time built into the schedule so we're looking good for a launch at the end of March." [Banke, FLORIDA TODAY, p. 4A, Feb. 20, 1992; KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 20, 1992; "Space Shuttle Atlantis Moved to Launch Pad," THE ORLANDO SENTINEL, Feb. 21, 1992.]

STS 45 UPDATE: ATLANTIS AT PAD

Atlantis' arrival at launch pad 39A early this morning marked a visible step toward the STS 45 launch planned next month. Shuttle processing team members set an Orbiter Processing Facility (OPF) record in getting Atlantis ready for the upcoming launch. Atlantis spent 55 days in the OPF, breaking the previous record of a 60-day OPF flow set during the STS 43 processing operations last year, also with the Shuttle Atlantis. Flight preparations for Atlantis' 11th flight, STS 45, began December 9 following its last mission, STS 44, which ended with a landing at Edwards Air Force Base, CA. While in the OPF, the three Space Shuttle main engines were installed. Engine locations for this flight are as follows: engine 2024 in the No. 1 position, engine 2012 in the No. 2 position, and engine 2028 in the No. 3 position. These engines were installed on January 10-11. Technicians installed the ATLAS payload, the primary objective of Mission STS 45, into Atlantis' payload bay on January 25, while the vehicle was in the OPF. The Shuttle Solar Backscatter Ultraviolet Experiment was installed in the payload bay on January 28. The payload was closed out for flight in the OPF on February 9.

The Crew Equipment Interface Test with the STS 45 flight crew was conducted in the OPF on February 1. The crew became familiar with the configuration of the Orbiter, the ATLAS payload and unique equipment for Mission STS 45. Stacking operations for the solid rocket boosters began December 10 on mobile launcher platform 1, and were completed by January 15. The external tank was mated to the boosters on January 22 and the Orbiter Atlantis was transferred to the Vehicle Assembly Building February 13, where it was mated to the external tank and solid rocket boosters. A dress rehearsal launch countdown involving the flight crew is scheduled for February 26-27. The STS 45 crew will arrive at KSC on February 25 for the test. While here, they will receive training in emergency egress procedures at the launch pad and at the runway. On February 27, the crew members will don their flight suits and practice getting ready for an actual launch day. The test will end at 11 a.m. EST, February 27, with a simulated main engine cutoff.

Charles F. Bolden is the STS 45 Commander and **Brian Duffy**, is the Pilot. Three Mission Specialists include: **Michael C. Foale, Kathryn D. Sullivan** and **David C. Leestma**. The two Payload Specialists are **Byron Lichtenberg** and **Dirk Frimout**, a Belgian who represents

the European Space Agency. Mission STS 45, scheduled for eight days, is part of NASA's Mission to Planet Earth, a large-scale, unified study of planet Earth as a single, dynamic system. Scientists will gather new information to gain a better understanding of how the atmosphere reacts to natural and human-induced atmospheric changes. This is the first of nine ATLAS missions that will be undertaken throughout the current 11-year solar cycle. The end of mission landing is planned at the KSC Shuttle Landing Facility. KSC's landing convoy teams will be on station to prepare the vehicle for tow to the OPF. Atlantis' next flight will be Mission STS 46 with the Tethered Satellite System and the EURECA payload scheduled for launch this summer. ["Atlantis Arrives at Launch Pad After Setting Processing Record," NASA/KSC News Release No. 20-92, Feb. 20, 1992.]

ENDEAVOUR: EVA TESTS

In OPF Bay 1, technicians have completed the functional tests of the system for the extravehicular mobility units assigned to Endeavour for its STS 49 mission. A Crew Equipment Interface Test with the flight crew has been scheduled for this weekend. Work in progress: tests of the Tacan system; preparations for the CEIT; leak and functional tests of the waste containment system; configuring the aft flight deck for the STS 49 mission. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 20, 1992.]

COLUMBIA: RADIATOR TESTS DONE

Functional tests of Columbia's radiators have been completed in OPF Bay 3. Work in progress: removal of the mock left orbital maneuvering system pod; validation of the electrical system; preparations to install the extended duration Orbiter pallet; removal of main propulsion system temperature probes and check valves; installation of thermal blankets. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 20, 1992.]

DISCOVERY POWERED UP

In OPF Bay 2, Discovery has been powered up by technicians; the tail cone has been removed and the payload bay doors have been opened. Work in progress: disconnecting the International Microgravity Laboratory from the Orbiter and post-flight inspections and deservicing operations. Removal of the IML-1 payload has been scheduled for February 23. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 20, 1992.]

February 21:

ATLANTIS: POWERED UP

At Launch Complex 39A, Atlantis has been powered up in preparation for its STS 45 mission launch next month. Work in progress: making connections between the launch pad and the vehicle elements; preparations to remove two auxiliary power units; preparations for the helium signature leak test of the main propulsion system and three main engines. Work scheduled: the helium signature leak test for February 23 and the Terminal Countdown Demonstration Test for February 26-27. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 21, 1992.]

ENDEAVOUR: CEIT SCHEDULED

Endeavour's Crew Equipment Interface Test has been scheduled with the flight crew to occur this weekend. Work in progress: functional test of the galley; check of the waste containment system; tests of the Tacan system; preparations for the Crew Equipment Interface Test (CEIT); leak and functional tests of the waste containment system;

configuring the aft flight deck for the STS 49 mission. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 21, 1992.]

COLUMBIA: MOCK LEFT OMS POD REMOVED

Technicians in Orbiter Processing Facility Bay 3 have removed the mock left orbital maneuvering system pod which Columbia carried during its ferry flight from California. Work in progress: validation of the electrical system; preparations to install the extended duration Orbiter pallet; installation of thermal blankets. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 21, 1992.]

DISCOVERY: REMOVAL OF IML SCHEDULED

On February 23 technicians will remove the International Microgravity Laboratory payload from Discovery's cargo bay. Work in progress: disconnecting the International Microgravity Laboratory; removing the IML tunnel; preparations to offload residual hypergolic propellants. [KSC SHUTTLE STATUS REPORT, 10 a.m., Feb. 21, 1992.]

February 22: **ENDEAVOUR'S CREW ARRIVES TODAY**

Endeavour's STS 49 crew arrives today at Kennedy Space Center to view the new Orbiter for their first time. KSC spokeswoman **Lisa Malone** said, "This will give them a chance to be around the Orbiter they'll be living and working in during their mission." The crew will enter the crew cabin while the Orbiter is in OPF Bay 1 today to familiarize themselves with the flight deck, mid-deck and its airlock and payload bay. The STS 49 crew includes: Commander **Daniel C. Brandenstein**, Pilot **Kevin P. Chilton** and mission specialists **Thomas D. Akers, Richard J. Hieb, Bruce E. Melnick, Kathryn C. Thornton** and **Pierre Thuot**. One of Endeavour's APUs is being replaced because its manufacturer, Sunstrand Corp. (Rockford, IL), found corrosion in a similar unit's fuel pump. Another APU scheduled for removal is suspected of having a bad weld on a valve. [Halvorson, FLORIDA TODAY, p. 4A, Feb. 22, 1992.]

February 23: **SPACEHAB WORK UNDER WAY**

Workers at Port Canaveral have begun to prepare Spacehab, a 10-foot long, 13-foot diameter container, for a 1993 Space Shuttle mission. Spacehab is a private, commercial venture unlike the Spacelab venture which is sponsored by the European Space Agency. Riding in the Orbiter's payload bay, Spacehab is connected to the crew cabin by a short tunnel. The first of two flight-worthy modules arrived here from their Italian manufacturer on Feb. 12. According to Spacehab's Senior Manager of Ground Operations **Bill Spradlin**, the experiment container will be given a detailed cleaning, then prepared for transport to Kennedy Space Center where it will be tested in preparation for a June 1993 flight. [Banke, FLORIDA TODAY, p. 10E, Feb. 23, 1992.]

MCCARTNEY TO GET DEBUS AWARD

The Kurt H. Debus Award will be awarded this year to former Kennedy Space Center Director **Forrest S. McCartney**. The Chairman of the National Space Club Florida Committee **John Mansur** said of McCartney, "He's just the perfect selection." He cited McCartney's leadership in returning the Space Shuttle Program to flight after the Challenger accident in January 1986. Previous winners include **George Page** and **Lyle Holloway**. The guest speaker will be former NASA Administrator **James Beggs**. ["Former

KSC Director to Receive Debus Award," FLORIDA TODAY, p. 9E, Feb. 23, 1992; "Former KSC Director Joins Honored Roll," FLORIDA TODAY, p. 2B, March 8, 1992.]

GALLO WINS SILVER SNOOPY

Pat Gallo, a planning specialist for Lockheed Space Operations Co., was presented the coveted Silver Snoopy Award by astronaut **James H. Newman**. Gallo, a senior member of the Shuttle Processing Contract Team manifest planning office, works in the Integrated Advanced Planning Directorate at the space center. ["Merritt Island Man Wins Silver Snoopy," FLORIDA TODAY, p. 9E, Feb. 23, 1992.]

February 25:

STS 45 CREW ARRIVES

The seven-member astronaut crew for the STS 45 mission arrived at the Shuttle Landing Facility in T-38s this morning at about 7:40 a.m. KSC spokesman **Karl Kristofferson** said, "They're coming here primarily for a dress rehearsal of the actual countdown. It's an opportunity for the flight crew and the launch team to get together and work out any problems." The standard contingency training for the crew is underway which this afternoon involves driver training in the M-113 escape vehicle. Early this evening before dinner the Commander and Pilot will fly the Shuttle Training Aircraft. Tomorrow will be a safety training walkdown of the launch pad. Meanwhile, at Launch Complex 39A, vehicle power is up and in the aft main engine compartment the helium signature leak check of the main propulsion system and the three main engines is in process. Preparations are underway for the upcoming loading of storable propellants which will begin later this week. Work is currently in progress to remove the two auxiliary power units recommended for changeout by the vendor. On the flight deck, the inertial measurement units are undergoing calibration. [Diller, KSC STATUS REPORT, 11:45 a.m., Feb. 25, 1992; Banke, FLORIDA TODAY, p. 2A, Feb. 25, 1992.]

FOALE: KSC MOST SPECIAL PLACE

To astronaut **Michael C. Foale**, Kennedy Space Center "is the most special place in America, as far as the future goes, and maybe even the world. It's from here that we can go initially to orbit, then the planets, and I hope one day to the stars," he said. "I came all the way from Great Britain, where I was educated, to Houston, and now here I am in Florida getting ready to take what I consider to be a first step toward the stars," he added. Maybe I won't go to the stars, but maybe my grandchildren will." Foale is at the space center to take part in the Terminal Countdown Demonstration Test which precedes his STS 45 mission, currently scheduled to launch on March 23. [Halvorson, FLORIDA TODAY, p. 4A, Feb. 26, 1992.]

PRESIDENTIAL AWARD WINNERS, KSC

Former KSC Director **Forrest S. McCartney**, KSC Launch Director **Robert B. Sieck** and **Alan J. Parrish**, KSC Director of Safety, Reliability and Quality Assurance, will receive the Presidential Rank Award for Meritorious Executive at a ceremony February 26, at NASA Headquarters in Washington, D.C. NASA Administrator **Richard H. Truly** will present the award which is given to senior executive service members of the federal government whose performance is exceptional for a period of at least three years. ["KSC Managers to Receive Presidential Award," NASA/KSC News Release No. 21-92, Feb. 25, 1992; "Three Space Veterans Win Prestigious Award," FLORIDA TODAY, p. 9E, March 1, 1992.]

February 26: **MARS OBSERVER ROCKET ARRIVES**

The Titan III rocket which will launch the Mars Observer spacecraft on an interplanetary trajectory later this year is scheduled to be offloaded from an Air Force C-5A transport plane on Cape Canaveral Air Force Station (CCAFS) on February 28, at 9 a.m. The booster, which was built by Martin Marietta (Denver, CO) is targeted for liftoff at the start of the Mars planetary launch window which opens September 16. Mars Observer is the first mission to that planet since the Viking Program in 1976. It is the initial spacecraft in a series of lower cost "observer class" planetary missions developed by Jet Propulsion Laboratory (JPL) (Pasadena, CA) that will explore objects in the inner solar system such as Venus, the Moon, Mars, and near-Earth asteroids and comets. NASA Space Science Chief **Lennard A. Fisk** said, "The Mars Observer mission is important because it will give us very detailed information about Mars - data that is substantially different than we've previously had in terms of possible life or water on Mars. The data will lay the foundation for future generations to explore the planet." The Titan III launch vehicle will be moved to the Vertical Integration Building (VIB) on Cape Canaveral Air Force Station for prelaunch processing. Early in July, the vehicle will have two solid rocket boosters attached and then be moved to a completely rebuilt Launch Complex 40. ["Note to Editors and Broadcast News Directors: Titan III Rocket for Mars Observer Arrives at Cape Canaveral," NASA/KSC News Release No. 23-92, Feb. 26, 1992; Halvorson, FLORIDA TODAY, p. 4A, Feb. 29, 1992.]

INTELSAT BOOSTER ARRIVES AT KSC

The solid fuel rocket stage that a pair of NASA astronauts will attach to a stranded Intelsat satellite during the Space Shuttle Endeavour's first mission arrived this morning at KSC's Vertical Processing Facility (VPF). The capture bar which will be used by the crew to grapple the satellite was installed on the booster cradle this afternoon. The upper stage will propel the satellite to its proper orbit which was not successfully accomplished after launch aboard a Titan expendable rocket two years ago. Tomorrow, the stage contained within its cradle will be rotated and hoisted into the east test cell of the VPF. On February 29, a "stand alone" electrical test of the booster with its associated cradle will be conducted. Members of the STS 49 crew are expected to be at KSC next month for a "sharp edge" inspection of the booster. Installation into the payload canister will occur during the first week of April so that the stage can be transported to Pad 39B to await the arrival of the Space Shuttle Endeavour. The stage was integrated with the cradle at Astrotech (Titusville, FL) earlier this month by Hughes Aircraft engineers prior to its arrival at KSC. ["Upper Stage Booster for Endeavour's Intelsat Rescue Mission Arrives at KSC," NASA/KSC News Release No. 24-92, Feb. 26, 1992.]

VAB: ENDEAVOUR TO BE TARDY

With its move to the VAB now scheduled for March 2, Endeavour's processing managers are concerned that the necessary paperwork may not be completed on time. "Right now it's tight, but we feel we can make it," said **John "Tip" Talone**, NASA manager in charge of preparing the newest Orbiter for space flight. He said that technicians must still complete tests of Endeavour's flight control and nosewheel steering systems and the aft engine compartment must be closed out before the vehicle is ready for its STS 49 mission to rescue the Intelsat Satellite, now in an incorrect orbit. [Halvorson, FLORIDA TODAY, p. 6A, Feb. 27, 1992.]

EARTH ATMOSPHERIC STUDY

The Earth's atmosphere will get extensive every year or two when Space Shuttles carry instruments to measure the degradation of the atmosphere over an 11-year solar cycle. Atlantis' STS 45 will be the first of these missions "about finding out important answers about the Earth on which we live and how we can better survive for generations and generations to come," according to STS Commander **Charles F. Bolden**. "If we get half the answers we are seeking, then I think we'll all be better by it and our kids will be better by it and our grandkids will be better by it." Bolden and the six other members of his crew are at Kennedy Space Center for the terminal countdown demonstration test currently underway. [Halvorson, FLORIDA TODAY, p. 6A, Feb. 27, 1992.]

BATTERY PROBLEM DELAYS ATLAS LAUNCH

"We're now proceeding with a plan to launch...on Friday (February 29) at 6:09 p.m. local time, at the opening of a three-hour, 30-minute window," said **Marty Winkler**, General Dynamics Space Systems Division vice president for launch operations. A battery problem has delayed the launch which was scheduled for February 27; two spare batteries are being activated and tested; one will be installed in the Atlas rocket early today, according to Winkler. [Banke, FLORIDA TODAY, p. 6A, Feb. 27, 1992.]

TRULY: CHALLENGER CRIPPLED NASA'S REPUTATION

NASA Administrator **Richard H. Truly** told the National Space Club that the Challenger accident claimed the lives of all seven of its astronauts but also crippled NASA's reputation. "NASA no longer was the paragon of excellence, and the second-guessers moved in," he said. "I thought my job was to discovery the cause, fix it, ensure future safety and reliability and return the Space Shuttle to safe flight. I quickly discovered, however, I was embroiled in politics, budgets and a critical re-examination of NASA, all surrounded by a media zoo." He denied that NASA was without direction. "NASA knows precisely where it is headed," Truly asserted. He told the National Space Club that without solid funding, the space agency is "in jeopardy....and it is not helped by what passes in this town for analysis. The cheap shots must end. Without teamwork, there is nothing. Give the new administrator your best advice and support, but don't whisper your thoughts into the ear of your favorite Washington armchair analyst," he said. Truly's resignation as Administrator takes effect April 1. ["Truly: Stop 'Cheap Shots' Against NASA," FLORIDA TODAY, p. 1A, Feb. 27, 1992; Hoversten, USA TODAY, p. 1A, Feb. 27, 1992.]

February 27:

FIBER-OPTIC CABLE CONTRACT

Network Systems Solutions (Denver, CO) has been awarded a $1,249,990 contract to install fiber-optic cable at Kennedy Space Center. Under the fixed price contract, the small business firm will have 18 months to install cable between several Space Shuttle vehicle processing, payload processing, launch and control facilities, as well as communications switching centers at the space center, a network which is approximately ten miles long. One linkup will be between the Launch Complex 39 area's switching center, the Vehicle Assembly Building Repeater (VABR) and the new Processing Control Center (PCC).

Another section will tie the PCC with the Launch Control Center (LCC). The LCC will be linked with separate connections to the VABR and both Shuttle Launch Pads 39A and

39B. Other installations will be made between the solid rocket booster Assembly and Refurbishment Facility (ARF) and the Communications Distribution and Switching Center (CDSC) in the KSC Industrial Area. Still another fiber-optic connection will be made between the VABR and the Orbiter Processing Facility (OPF).

This contract makes up Phase IX of fiber-optic cable installation at KSC. The first installations began in 1985. The new cable will increase the KSC communication system's capacity and expand the several miles of cable that has already been installed at the 140,000-acre space center. Eventually, most KSC facilities will be linked with this advanced communications hardware. The fiber-optic cable at KSC carries digitized communications data at a much higher rate than in-place X-band copper wire and provides more capabilities than the old hardware. A system that allows high-speed computers to relay Space Shuttle Orbiter test and status data from processing areas and launch pads to the LCC is essential to the success of Shuttle missions. [NASA/KSC News Release No. 22-92, Feb. 27, 1992.]

BAD BOOSTER DELAYS ATLAS LAUNCH

A problem with a commercial Atlas' booster avionics system has delayed launch until at least March 2. This marks the second delay in the effort to launch a Galaxy 5 communications satellite for Hughes Communications Inc. (Los Angeles, CA). There will be three opportunities on March 2 to launch the rocket. ["Bad Booster Bumps Atlas Liftoff," FLORIDA TODAY, p. 2A, Feb. 28, 1992.]

STS 45 ASTRONAUTS PRACTICE

The STS 45 crew of Atlantis, along with the Kennedy Space Center launch team, successfully concluded the terminal countdown demonstration test, according to KSC spokesman **Bruce Buckingham**: "We had a good test; there were un unexpected hitches." The crew spent the final hours of the test in the crew cabin of Atlantis, but earlier in the day they practiced emergency escape procedures at Launch Complex 39A. There are seven steel baskets located at the top of LC 39A to help astronauts evacuate a Space Shuttle if the need arose. [Halvorson, FLORIDA TODAY, p. 2A, Feb. 28, 1992.]

February 29: **PRICE HIKES: TOURS & IMAX THEATER**

Starting tomorrow, March 1, the cost of KSC tours will rise to $7 for adults and $4 for children, ages 3 to 11; that represents a dollar increase in each price. IMAX Theater tickets will also increase to $4 (up $1.25) for adults and $2 for children (up 25 cents). **George Meguiar**, Marketing Director for Spaceport USA, said the increases "just normal business practices." He remarked that in recent months the attraction had added two new exhibits: "Spinoffs from Space" and "Space Station" and that the full-size Shuttle replica called Ambassador will not be heading for Europe as scheduled, but will stay at Kennedy Space Center for at least another year. Meguiar said, "It is our intention to always have a Shuttle here, although I couldn't tell you now what will happen next year." The Spaceport has also undergone recent expansion in souvenir shop, the Gift Gantry. [Cook, FLORIDA TODAY, p. 1A, Feb. 29, 1992.]

ATLAS LAUNCH: MARCH 5

The launch of an Atlas rocket has been delayed again until March 5 because more time is needed to replace a faulty part than was originally anticipated. The problem is in a battery that powers the rocket's self-destruct system. Launch on Thursday (March 5) may come during one of three possible windows: 6:07 and 7:14 p.m.; 7:39 and 7:57 p.m.; and between 8:22 and 835 p.m. ["Atlas Launch Set for Thursday," FLORIDA TODAY, p. 4A, Feb. 29, 1992.]

MARCH

March 2: **STS 45: APU LINES CONNECTED**

On Launch Complex 39A, the Space Shuttle Atlantis has had its APU fuel lines connected. Work in progress: servicing the auxiliary power units (APUs) with lube oil; preparations to load hypergolic propellants into the Orbiter's onboard storage tanks. Scheduled work includes: a hot firing of the two APUs March 5 to verify their operability and a Flight Readiness Review on March 10. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 2, 1992.]

ENDEAVOUR: PAYLOAD BAY DOORS CLOSED

In Orbiter Processing Bay 1, technicians have closed the payload bay doors and conducted a frequency response test of the aerosurfaces of the Space Shuttle Endeavour. Work in progress for the STS 49 mission: final powering down of the Orbiter; closeouts of the aft compartment; final inspections and cleaning. Endeavour is scheduled for a rollover to the Vehicle Assembly Building on March 4; there it will be mated with its external tank and solid rocket boosters beginning at 8 a.m. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 2, 1992.]

COLUMBIA: OMS POD INSTALLED

In OPF Bay, workers readying Columbia for its STS 50 mission have installed the orbiter's right orbital maneuvering system (OMS) pod; the left pod will be installed tomorrow (March 3). Work in progress: tests of the power reactant storage and distribution system; preparations to install the extended duration Orbiter pallet; and tests of the right OMS pod. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 2, 1992.]

DISCOVERY: DECONFIGURATIONS

Technicians are busy in OPF Bay 3 removing the forward reaction control system and the heat shields around the main engines of the Space Shuttle Discovery. They are also offloading residual fluids and deconfiguring the Orbiter's payload bay. Discovery is scheduled to undergo extensive modifications of the sort recently made upon the oldest Space Shuttle, Columbia. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 2, 1992.]

March 4: **STS 45: APU CLOSEOUT ON ATLANTIS**

At Launch Complex 39A, technicians have closed out Atlantis' APUs and are loading hypergolic propellants into the Orbiter's onboard storage tanks that feed the forward reactions control system thrusters and both orbital maneuvering system engines. Hydrazine will be loaded into the Orbiter's auxiliary power units and the booster's hydraulic power units. Work scheduled: a hot firing of the two APUs March 5 between 11 a.m. and noon; a Launch Readiness Review is set for March 5 and a Flight Readiness Review scheduled for March 10. The reviews are routinely scheduled, according to KSC spokeswoman **Lisa Malone**. She said, "We basically review everything to make sure KSC is ready to support the launch, mission and landing." The firm launch date - now targeted for March 23 - will be set after the March 10 meeting. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 4, 1992; Banke, FLORIDA TODAY, p. 5A, March 4, 1992.]

ENDEAVOUR READIES FOR STS 49

The aft compartment of the Space Shuttle Endeavour has been closed out by technicians in OPF Bay 1; closeouts of the crew cabin are in progress as are final inspections and cleaning. Work scheduled: determining the Orbiter's weight and center of gravity; bolting the Orbiter atop the transporter; inspections of the main landing gear doors; transfer of Endeavour to the Vehicle Assembly Building for mate with the external tank and solid rocket boosters now targeted for the afternoon of March 5. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 4, 1992.]

COLUMBIA: TESTS IN PROGRESS

Tests of the power reactant storage and distribution system and of the right orbital maneuvering system (OMS) pod are in progress on Columbia in OPF Bay 3. Technicians are also making connections of the left orbital maneuvering system pod and preparing to install the Extended Duration Orbiter (EDO) pallet which is scheduled to be transferred from the VAB to the OPF March 5. Installation of the EDO in Endeavour is scheduled for early next week. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 4, 1992.]

DISCOVERY IN PROCESSING

The Space Shuttle Discovery is in OPF Bay 2 for processing; technicians are currently offloading residual fluids, beginning extensive structural inspections in the midbody area of the Orbiter and undertaking drying operations for the main engines. The three main engines are scheduled for removal next week. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 4, 1992.]

ATLAS DELAYED FOR TESTS

The launch of an Atlas rocket at Cape Canaveral Air Force Station for March 5 has been rescheduled for March 10 because engineers have ordered more tests of parts replaced since problems surfaced last week with the guidance and flight control systems. "There are no other problems that we are working on and we really feel confident that next Tuesday [March 10] is going to be the day we launch," said **Jack Isabel**, spokesman for General Dynamics which manufactured the Atlas rocket. ["Engineers Postpone Launch of Atlas Rocket for Testing," FLORIDA TODAY, p. 5A, March 4, 1992.]

March 5:

ATLANTIS: HOT FIRING TONIGHT

Technicians at Launch Complex 39A who are readying Atlantis for its STS 45 mission have loaded hypergolic propellants into the Orbiter's onboard storage tanks that feed the forward reaction control system thrusters and both orbital maneuvering system engines. Hydrazine was loaded into the Orbiter's auxiliary power units and the booster's hydraulic units. Work in progress: preparations to perform tonight's hot firing of two auxiliary power units (APUs); disconnecting lines used in the hypergolic loading operation; reopening the launch pad this afternoon. An improved APU now in slot NO. 2 will run for 12 minutes tonight; the other APU, in slot No. 1, will run for 7 minutes. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., March 5, 1992.]

ENDEAVOUR: TITANIUM SOCKET BULGE

Closeouts of Endeavour's crew cabin are underway in OPF Bay 1 where technicians are taking measurements and sanding the liquid oxygen socket where the external tank connects to the Orbiter. Engineers found a slight bulge in the titanium socket that needs to be sanded for a correct fit. The socket's aluminum liner is also being sanded. Work scheduled: determining the Orbiter's weight and center of gravity; bolting the Orbiter atop the transporter; inspections of the main landing gear doors; transfer of Endeavour to the Vehicle Assembly Building for mate with the external tank and solid rocket boosters now targeted for tomorrow (March 6) evening. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., March 5, 1992.]

COLUMBIA: EDO PALLET TRANSFERRED TO OPF

The Extended Duration Orbiter Pallet (EDO) has been transferred from the Vehicle Assembly Building to OPF Bay 3 this morning; installation of the pallet is scheduled to occur early next week. Work in progress: tests of the left orbital maneuvering system pod; tests of the power reactant storage and distribution system and of the right orbital maneuvering system pod; preparations to install the EDO. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., March 5, 1992.]

March 6:

STS 45: SUCCESSFUL HOT FIRING

Atlantis' two auxiliary power units (APUs) were successfully hot fired today at 4:30 a.m. today and Launch Complex 39A was reopened for normal work. Pad workers are extending the rotating service structure around the Space Shuttle and draining the APU catch bottles. Scheduled work next week includes: a flight readiness test of the three main engines; ordnance operations; installation of the two contingency space suits and a Flight Readiness Review for STS 45 is set for March 10. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 6, 1992.]

ENDEAVOUR: CREW CABIN CLOSED OUT

The Space Shuttle Endeavour, awaiting rollover from OPF Bay 1 to the VAB, has had its crew cabin closed out by technicians who have also sanded the liquid oxygen socket where the external tank connects to the Orbiter. "There's no question in my mind that the team went the extra mile in getting Endeavour ready to leave the OPF. The team grabbed the challenge in getting a brand new Orbiter flight ready, overcame many obstacles and demonstrated tremendous teamwork. We're proud of the team and happy to see Endeavour on its way to the launch pad," said **Jay Honeycutt**, Director of Shuttle Management and Operations. Engineers had found a slight bulge in the titanium socket that would have interfered in connecting the Orbiter to the tank. Processing workers are determining the Orbiter's weight and center of gravity and bolting the Orbiter to the transporter. Scheduled work: inspections of the tiles on the main landing gear doors and rolling the Orbiter over to the Vehicle Assembly Building for mating with the external tank and solid rocket boosters; that occurs tomorrow (March 7) at 8 a.m. Endeavour's maiden voyage, STS 49, is scheduled for late April or early May. [Halvorson, FLORIDA TODAY, p. 2A, March 1, 1992; KSC SHUTTLE STATUS REPORT, 10 a.m., March 6, 1992; NASA/KSC News Release No. 27-92, March 6, 1992.]

COLUMBIA: BOTH OMS PODS TESTED

Both of Columbia's Orbital Maneuvering System (OMS) Pods have been tested while the Orbiter undergoes processing for STS 50 in OPF Bay 3. The Extended Duration Orbiter (EDO) Pallet will be installed in the vehicle next week. Work in progress: leak and functional tests of the auxiliary power units; tests of the electrical system and of the power reactant and distribution system; preparations to install the EDO. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 6, 1992.]

DISCOVERY: RESIDUAL FLUID OFFLOADING

Residual hypergolic propellants from Discovery will take place this weekend. The three main engines and both orbital maneuvering system pods will be removed next week. Currently, technicians are deservicing freon coolant loop No. 2, offloading residual fluids and making extensive structural inspections of Discovery's midbody. Before Discovery's next mission, STS 53, the Orbiter will undergo extensive modifications similar to those made to Columbia last year. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 6, 1992.]

MOBILE SERVICE STRUCTURE MOVED: CCAFS

At Cape Canaveral Air Force Station, Launch Complex 40 got a new 23-story, 11.4 million-pound mobile service tower to enable the launching of commercial Titan rockets from the pad. "This is the biggest rolling vehicle of its kind in the world," said **James "Ox" Van Hoften**, former astronaut and Senior Vice President of Bechtel National, Inc., which designed and built the tower. The tower will see its first service on the Mars Observer mission launch. At pad 36B, a General Dynamics Corp. Atlas 1 rocket is awaiting launch on March 10. [Banke, FLORIDA TODAY, p. 1A, March 9, 1992.]

March 7:

KATZ (LSO) WINS AWARD

Michael Katz, an engineer for Lockheed Space Operations Co., has been awarded the 1992 Robert E. Gross Award. The Gross Award is an annual honor presented by Lockheed in recognition of technical excellence to engineers in the various companies within the Lockheed Corporation. Katz will receive the award later this year at a ceremony in California. ["Lockheed Engineer Captures Award," FLORIDA TODAY, March 8, 1992.]

March 9:

ATLANTIS: FRR TOMORROW

The Flight Readiness Review for Atlantis' STS 45 mission will begin tomorrow [March 10]. Ordnance operations and installation of the two contingency space suits will also occur this week. Work in progress: purging the 17-inch umbilical cavity between the external tank and the Orbiter; draining the auxiliary power unit catch bottles and mating the Orbiter midbody umbilical unit to the Orbiter. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 9, 1992.]

CHROME ELECTRIC, INC. CONTRACT

Chrome Electric, Inc. (Titusville, FL) has been awarded a $518,480 contract for the installation of a fire alarm system for launch control and processing facilities at Kennedy Space Center. The small business firm will link fire detection sensors and audible alarms in the Vehicle Assembly Building (VAB), two Orbiter Processing Facility (OPF) high bays and the Launch Control Center (LCC) to a central monitor station in one room of the LCC.

In the case of a fire, the monitoring system's computerized digital display will provide a precise guide for KSC firefighters as to the location of the blaze. The Launch Complex 39 Area facilities that will be protected by the new, state-of-the-art alarm system are critical to the processing and launch of the Space Shuttle. [NASA/KSC Release No. 25-92, March 9, 1992.]

ENDEAVOUR: ROLLOVER COMPLETED

Another milestone on the way to Endeavour's maiden STS 49 flight was achieved March 7 when the Orbiter was rolled over to the Vehicle Assembly Building from the OPF; transfer was complete at 8:29 a.m. Former astronaut **Michael McCulley** said, "This is a pretty magnificent moment. Not just for us here, but for all of the United States." McCulley is now Deputy Launch Site Director for Lockheed Space Operations Co. Some 1200 Shuttle workers and their families were on hand to see Endeavour emerge from its processing hangar and be towed to the VAB. On March 8, the vehicle elements were mated and connections between the Orbiter and the external tank continue to be made. Endeavour will undergo its Shuttle Interface Test on March 10 and rollout to Launch Complex 39B is scheduled for early March 13. [Halvorson, FLORIDA TODAY, p. 2A, March 7, 1992; KSC SHUTTLE STATUS REPORT, 11 a.m., March 9, 1992; Halvorson, FLORIDA TODAY, p. 1A-2A, March 8, 1992.]

COLUMBIA: TESTING UNDERWAY

In preparation for its STS 50 mission, Columbia is undergoing a variety of tests this week: leak and functional tests of the APUs; tests of the electrical system and of the power reactant storage and distribution system. Preparations are also underway to install the EDO in the Orbiter this week. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 9, 1992.]

DISCOVERY: RESIDUAL PROPELLANTS OFFLOADED

Residual hypergolic propellants have been offloaded from Discovery this weekend. Deservicing of freon coolant loop No. 2 and extensive midbody structural inspections are in progress this week. Later this week, the three main engines will be removed from the Orbiter along with the removal of both orbital maneuvering system pods. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 9, 1992.]

March 10:

STS 45 LAUNCH: MARCH 23

NASA managers today set March 23, 1992, as the official launch date for the next Shuttle mission, STS 45, which will involve the Shuttle Atlantis carrying the Atmospheric Laboratory for Applications and Science (ATLAS-1) payload. During the 8 day mission, Atlantis' crew will study the chemistry of Earth's atmosphere, solar radiation, space plasma physics and ultraviolet astronomy. The launch window on March 23 opens at 8:01 a.m. EST and extends for 2 1/2 hours. Landing would normally take place at 6:08 a.m. EST, March 31 at the Kennedy Space Center, FL, weather permitting. Commanding Atlantis will be **Charles F. Bolden**, making his third space flight. **Brian Duffy** will serve as pilot, making his first Shuttle flight. Mission Specialists include **Kathryn D. Sullivan**, making her third flight; **David C. Leestma**, making his third flight; and **Michael C. Foale**, making his first flight. Payload Specialists will be **Byron Lichtenberg**, making his second flight and **Dirk Frimout**, a Belgian scientist, making his first flight. [NASA/KSC News Release: "Launch Advisory: Shuttle Mission STS-45 Set for Launch March 23," March 10, 1992.]

STS 45: FLIGHT READINESS TEST

While the STS 45 Flight Readiness Review is underway at Kennedy Space Center, the main engines of the Space Shuttle Atlantis are undergoing a Flight Readiness Test; the engines' valves are being cycled and sensors are being calibrated. Technicians at Launch Complex 39A have completely purged the 17-inch umbilical cavity between the external tank and the Orbiter; they have drained the auxiliary power unit catch bottles and mated the Orbiter midbody umbilical unit to the Orbiter. Scheduled work: ordnance operations this week; start of aft closeouts; installation of the two contingency space suits on March 13. KSC spokeswoman **Lisa Malone** said, "We feel good about the schedule and we're looking forward to launch." KSC SHUTTLE STATUS REPORT, 11 a.m., March 10, 1992; Banke, FLORIDA TODAY, p. 2A, March 10, 1992; Banke, FLORIDA TODAY, p. 6A, March 11, 1992.]

ENDEAVOUR: STS 49 VAB PROCESSING

Technicians in the Vehicle Assembly Building have completed the mechanical and electrical connections between Endeavour and its solid rocket boosters and external tank. Preparations have begun for Endeavour's Shuttle Interface Test and for attaching thermal protection material to the main engine nozzles. Rollout to Launch Complex 39B is slated for early March 13. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 10, 1992.]

TESTS BEGUN ON COLUMBIA

Work in progress upon Columbia includes: leak and functional tests of the auxiliary power units and the power reactant storage and distribution system; calibrations of the inertial measurement units; preparations to install the Extended Duration Orbiter (EDO) pallet; installation will occur later this week. Columbia's next mission will be STS 50. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 10, 1992.]

DISCOVERY: INSPECTIONS UNDERWAY

The Space Shuttle Discovery's next mission will be STS 53, but before that occurs the Orbiter is undergoing extensive modifications of the sort made upon Columbia last year. Currently, technicians in OPF Bay 2 are deservicing freon coolant loop No. 2 and making extensive structural inspections in the midbody of the vehicle. Work scheduled: removal of the three main engines and orbital maneuvering system pods this week. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 10, 1992.]

March 11:

DAN GOLDIN TO HEAD NASA

TRW Vice President and General Manager **Daniel S. Goldin** was nominated to succeed **Richard H. Truly** as NASA Administrator today by President **Bush** during a press conference. "Dan is a leader in America's aerospace industry and a man of extraordinary energy and vitality," the president said. "Working with the vice president as chairman of the Space Council, Dan Goldin will ensure America's leadership in space as we enter the 21st century." In the 1960s, Goldin began his space career as a research scientist at Lewis Research Center (Cleveland, OH). Other candidates for the top NASA job were **Edward C. "Pete" Aldridge**, former Air Force Secretary, **James Abrahamson**, former director of the Strategic Defense Initiative Organization and **David Kearns**, former chief executive officer of Xerox Corp. [Halvorson and Banke, FLORIDA TODAY, March 11,

1992; Halvorson and Banke, FLORIDA TODAY, pp. 1A-2A, March 12, 1992; Holton & Date, THE ORLANDO SENTINEL, pp. A-1 & A-8, March 12, 1992.]

[] PREVIOUS NASA ADMINISTRATORS

ADMINISTRATOR	TENURE
T. Keith Glennan	1958-1961
James Webb	1961-1968
Thomas Paine	1969-1970
James Fletcher	1971-1977
Robert Frosch	1977-1981
James Beggs	1981-1985
James Fletcher	1986-1989
Richard H. Truly	1989-1992

["Previous NASA Administrators," THE ORLANDO SENTINEL, p. A-8, March 12, 1992.]

[] TRULY'S REMARKS ON GOLDIN APPOINTMENT

NASA Administrator **Richard H. Truly** issued the following statement today concerning the nomination of **Daniel S. Goldin** to be NASA Administrator. "I am pleased to learn that President Bush intends to nominate Daniel S. Goldin as the next Administrator of NASA. Mr. Goldin has a long history of working in the space arena, in both NASA and DOD programs, and the NASA team stands ready to support him. The continued achievement's of NASA's space and aeronautics research programs are vitally important to the nation, and Mr. Goldin will be arriving at a time of great challenges and opportunities for the future. I wish him every success as he comes to this elite organization." [Truly Statement on Goldin Appointment, March 11, 1992.]

[] CRIPPEN: GOLDEN APPOINTMENT

Statement from KSC Director **Robert L. Crippen** on the appointment of **Daniel S. Goldin**: "I was delighted to learn the President has nominated a new NASA Administrator. While I do not know Daniel Goldin personally, I am sure the President, who has made a strong commitment to the nation's space program, has nominated someone he is confident can lead NASA through the very challenging and exciting years ahead of us. The challenging and exciting years we are facing are also critical years for NASA, and I look forward to working closely with the new administrator." [Crippen Statement on Goldin Appointment, March 11, 1992.]

[] BEACH CLOSURE: ENDEAVOUR ROLLOUT

Playalinda Beach will be closed to visitors as of Friday (March 13, 1992) as NASA prepares for the launch of the Space Shuttle Endeavour on mission STS 49. The beach closing is required because of the move of the Orbiter from the Vehicle Assembly Building

to Launch Complex 39B. Rollout is scheduled to begin at 8:00 a.m. Launch is currently targeted for the first week of May. The southern part of the Canaveral National Seashore will remain closed until the morning after launch, reopening at normal hours at launch plus one day. [NASA/KSC Release No. 28-92, March 11, 1992.]

[] **STS 45: FRR COMPLETED**

The Flight Readiness Review for STS 45 has been completed at Kennedy Space Center and NASA managers have set March 23 as the launch date for Atlantis' next mission. A Flight Readiness Test has also been completed. Work in progress: closing the launch pad for ordnance operations today. Work scheduled: start of the aft closeouts and installation of the two contingency space suits on March 13. [KSC SHUTTLE STATUS REPORT, 11 a. m., March 11, 1992; Date, THE ORLANDO SENTINEL, March 11, 1992.]

[] **STS 49: SHUTTLE INTERFACE TEST COMPLETED**

In VAB Bay 1, workers have completed Endeavour's Shuttle Interface Test in preparation for the planned rollout of the newest Orbiter to Launch Complex 39B at 8 a.m., March 13. A global profile test of the orbital maneuvering system engines has also been completed. Work in progress: preparations for rollout; attaching thermal protection material to the main engine nozzles; leak test of the liquid oxygen umbilical between the external tank and the Orbiter. [KSC SHUTTLE STATUS REPORT, 11 a. m., March 11, 1992.]

[] **COLUMBIA: MAIN PROPULSION TESTS**

In OPF Bay 3 work in progress includes: tests of the main propulsion system; leak and functional tests of the auxiliary power units; tests of the power reactant storage and distribution system; preparations to install the Extended Duration Orbiter (EDO) pallet ; installation of the Ku-band antenna drive assembly; preparations to install the three main engines. [KSC SHUTTLE STATUS REPORT, 11 a. m., March 11, 1992.]

March 12: **STS 45 UPDATE**

Ordnance installation operations upon Atlantis have been completed at Launch Complex 39A as have main engine valve cycles and leak checks. Work in progress: auxiliary power unit catch bottle draining; preparations for Orbiter aft closeouts; power up ordnance checks. Contingency space suit installation is scheduled for March 13. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 12, 1992.]

[] **ENDEAVOUR: LEAK CHECK COMPLETED**

In preparation for its imminent rollout for its STS 49 mission, Endeavour has had a 400 psi leak check on its gaseous oxygen lines performed. Work in progress: vehicle rollout preparations; Orbiter and external tank closeouts; insulation of fuel lines; Orbiter and external tank cavity purges. Work scheduled: closing of aft compartment tonight; retraction of work platforms from around vehicle in VAB; rollout of Endeavour to Launch Complex 39B set to begin at 8:00 a.m. March 13. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 12, 1992.]

STS 50 PROCESSING: COLUMBIA

Work in progress includes: main propulsion system tests; auxiliary power unit leak and functional tests; Ku-Band wire harness installation; preparations for installation of Extended Duration Orbiter (EDO) pallet; star tracker door installation. The EDO pallet's installation is scheduled for March 13. In OPF Bay 2, the main engines and orbital maneuvering system pods will be removed from Discovery tomorrow. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 12, 1992.]

ATLAS READY, AGAIN

The much delayed Atlas launch with its Galaxy 5 communications satellite payload is scheduled to lift off tonight during one of three launch windows [SEE ABOVE]. "This satellite will be the satellite most people in America will get cable television from for the next 12 years," said **Jerry Farrell**, vice president of Hughes Communications, Inc., manufacturer and owner of the satellite. It will replace the cable satellite known as Westar 5. Tonight will mark the sixth time the rocket has been readied for launch. [Banke, FLORIDA TODAY, p. 8A, March 12, 1992.]

March 13:

SPACESUITS INSTALLED IN ATLANTIS

"This is going to be a big week. We're going to be getting ready for our second mission of the year," said Kennedy Space Center spokesman **Bruce Buckingham**. Contingency spacesuits have been installed in the midbody of Atlantis and the first part of ordnance operations have been completed at Launch Complex 39A. Work in progress: tests of the systems supporting the two spacesuits; purges of the external tank; closing out of the aft compartment. Work scheduled: closing out the aft compartment next week; launch countdown starts March 20 at the T-43 hour mark and the STS 45 flight crew arrives the same day. Buckingham said the astronauts will spend the days before launch attending briefings, flying , checking their flight suits for fit and undergoing final physical examinations. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 13, 1992; Halvorson, FLORIDA TODAY, p. 7A, March 15, 1992.]

ENDEAVOUR: STS 49 PREPARATIONS

"All this whining about Americans don't do good work is B. S.," said **John "Tip" Talone, Jr.**, Manager of Endeavour Processing. "I know better. Americans, when they're given a challenge, do damn good work, really good work, extraordinary work that a lot of people in the world don't even care to try to do." Endeavour began its first rollout ever this morning at 7:18 a.m.; it was expected to be hard down at the pad by 2:00 p.m. Once at the pad, technicians began to make connections between the launch pad and the Orbiter elements. There is an engine flight readiness test on March 22. Two auxiliary power units will be replaced next week. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 13, 1992; Banke, FLORIDA TODAY, p. 1A, March 14, 1992; Banke, FLORIDA TODAY, p. 9E, March 15, 1992; Halvorson and Banke, FLORIDA TODAY, p. 9A, March 13, 1992.]

STS-50: KU-BAND ANTENNA INSTALLED

The Ku-Band antenna drive assembly has been installed in Columbia as part of processing work for the oldest Shuttle's STS 50 mission. Work in progress: tests of the main propulsion system; leak and functional tests of the auxiliary power units; tests of the power reactant storage and distribution system; preparations to install the Extended

Duration Orbiter (EDO) pallet. Columbia's three main engines will be installed next week. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 13, 1992.]

DISCOVERY: MODIFICATION PERIOD TO START

In OPF Bay 2, technicians have completed the final power down of Discovery for its modification period; the right orbital maneuvering system pod was removed yesterday; the No. 2 main engine has been removed; the freon coolant loop No. 2 was deserviced. Work in progress: removal of the main engines and extensive structural inspections. The left orbital maneuvering system pod will be removed next week. [KSC SHUTTLE STATUS REPORT, 11 a.m., March 13, 1992.]

ATLAS FINALLY LAUNCHES

"The launch of Galaxy 5 represents a very significant era in cable television distribution<' said **Jerry Farrell**, Hughes Communications, Inc. "Galaxy 5 will be the premiere cable satellite for the next decade." Farrell spoke just after the launch of Atlas 1 (built by General Dynamics Corp.) at 7 p.m. tonight. General Dynamics plans to launch 23 more rockets over the next seven years; three Atlas launches are scheduled for this year. [Halvorson, FLORIDA TODAY, p. 6A, March 14, 1992.]

NEWMAN GIVES SNOOPY AWARDS

Astronaut **James H. Newman** has recently awarded Silver Snoopy Awards to **Christopher Gariepy**, (Lockheed Space Operations Co.); **John Proferes, John Ghanele** and **Herbert Muchow**, all employees of USBI. "Those of us who are astronauts thank you for the continued and outstanding support you have given us through your work," Newman said. ["Astronaut Doles Out Silver Snoopy Awards," FLORIDA TODAY, p. 9E, March 15, 1992.]

March 16:

STS 45: ATLANTIS TANK PURGED

At Launch Complex 39A, the external tank of Atlantis has been purged in preparation for launch targeted for March 23. Work in progress: closing out the aft compartment; launch countdown preparations; topping off the ATLAS payload with freon. On March 20, the crew arrives and the launch countdown begins at noon at T-43 hour mark. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 16, 1992.]

ENDEAVOUR: APUS REPLACED

At Launch Complex 39B, Endeavour has had both its APUs replaced; the pad hook-ups have also been completed. Work in progress: cleaning of the payload bay; preparations for the flight readiness firing; preparations for the helium signature leak test of the main engines and main propulsion system. Work scheduled: an end-to-end test of the solid rocket boosters March 25 and an engine flight readiness test on March 26. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 16, 1992.]

COLUMBIA: SYSTEMS INSTALLED

In the early stages of processing for STS 50, the next mission of Columbia, technicians have installed main propulsion system regulators and helium tanks. Work in progress: installation of the three main engines and the Extended Duration Orbiter (EDO) pallet. Tests of the Ku-Band antenna are scheduled. The main engines have been removed

from the Space Shuttle Discovery which is beginning a period of extensive modifications in OPF Bay 2 before undertaking its STS 53 mission. Work in progress includes: extensive structural inspections; preparations to remove the left orbital maneuvering system pod; deservicing the freon coolant loop No. 1 and inspection of the radiators. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 16, 1992.]

[] **SR 3 WIDENING TO CONTINUE**

Brevard County officials said today that the widening of State Road 3 will resume soon. The widening was stalled when the county began the project before obtaining all of the needed right of way. Kennedy Space Center completed its portion of the widening project - two and a half miles - last August. **Henry Minneboo**, Director of the county's Road and Bridge Division, said the county's portion should be finished by February 1993, more than a year after the original completion target. [Reitz, FLORIDA TODAY, p. 1A, March 16, 1992.]

March 17: **STS 45: ATLAS PAYLOAD TOPPED OFF**

At Launch Complex 39A, technicians have topped off the ATLAS payload with freon as Atlantis waits a final week before launching STS 45 on March 23. "We're moving ahead, right on schedule," said Kennedy Space Center spokesman **Bruce Buckingham**. Work in progress includes: closing the payload bay doors for flight; closing out the aft compartment including final inspections, removing platforms and installing the doors for flight; launch countdown preparations; final ordnance operations tonight; stowing crew equipment in the crew cabin. The hypergolic propellant tanks will be pressurized overnight and the countdown begins March 20 at noon. The flight crew is expected to arrive at 6:30 p.m., also March 20. Liftoff is scheduled for 8:01 a.m.EST, Monday, March 23. The STS 45 crew includes Commander **Charles F. Bolden**, Pilot **Brian Duffy**, Mission Specialists **Kathryn D. Sullivan, David C. Leestma** and **Michael C. Foale** and Payload Specialists **Byron Lichtenberg** and **Dirk Frimout**. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 17, 1992; "Launch of Atlantis Still On Schedule At Launch Pad 39A," FLORIDA TODAY, p. 6A, March 18, 1992, (Banke, FLORIDA TODAY, p. 2A, March 17, 1992.]

[] **STS 49: CREW CABIN PREPARATIONS**

The Space Shuttle Endeavour, currently at Launch Complex 39B, continues to undergo preparations for its maiden flight, STS 49. The newest Shuttle's payload bay is being cleaned and prepared for the upcoming flight readiness firing on March 26. A helium signature leak test of the main engines and main propulsion system has begun and the crew cabin is being readied for flight. An end-to-end test of Endeavour's solid rocket boosters is scheduled for this week. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 17, 1992.]

[] **COLUMBIA: OPF BAY 3**

In OPF Bay 3, main engines No. 1 and 2 have been installed in Columbia and the EDO pallet was installed yesterday. Work scheduled: installing the No. 3 main engine; hooking up the Extended Duration Orbiter (EDO) pallet; tests of the Ku-band antenna. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 17, 1992.]

DISCOVERY'S MODIFICATIONS

Discovery is undergoing extensive structural inspections and the left orbital maneuvering system pod. Freon coolant loop No. 1 is being deserviced and the radiators are being inspected. Discovery's next mission will be STS 53. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 17, 1992.]

March 18:

FIRST 1992 CELSS CROP

NASA scientists today prepared to harvest nearly 350 pounds of potatoes grown without soil inside a computer-controlled biomass chamber on the Cape Canaveral Air Force Station. Today's harvest concluded a 90-day growth cycle for the second group of potatoes to be grown inside the bubble-shaped biosphere of the Closed Ecological Life Support System (CELSS). "The yield was significantly better than our preliminary studies," remarked NASA research plant physiologist Dr. Raymond Wheeler. "We're very pleased with the results of this potato crop and the continued performance of the CELSS chamber." The potato harvest was the eleventh in the history of KSC's CELSS research program. Lettuce, soybeans and wheat are other plants previously harvested from the CELSS chamber, which was constructed from test hardware used in the Mercury and Gemini programs. Using a specially developed environment controlled by computers, NASA scientists are learning how to deliver nutrients, monitor growth and gaseous outputs and produce healthy plants with a minimum amount of human intervention. CELSS is a futuristic program being developed for a time when astronauts will need to grow much of their own foods in space. The program will prove imperative and invaluable for future long-duration space missions and ventures into planetary habitats. The goals of CELSS researchers are to learn how to use a controlled environment to grow food, generate oxygen and recycle waste products to fertilize the plants. [NASA/KSC News Release No. 33-92, March 18, 1992.]

STS 45: LC 39A PROCESSING

Technicians at Launch Complex 39A have closed the payload bay doors of Atlantis for flight; they pressurized the hypergolic propellant tanks and completed final ordnance operations. Work in progress: closing out the aft compartment including removing platforms and installing the doors for flight; launch countdown preparations; stowing crew equipment in the crew cabin; moving booster flame deflectors to the launch position; installation of the crew escape pole; removing service platforms from the mobile launcher platform. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 18, 1992.]

ENDEAVOUR: STS 49 PREPARATIONS

At Launch Complex 39B technicians have completed a helium signature leak test of Endeavour's main engines and main propulsion system. Work in progress: end-to-end testing of the solid rocket boosters; cleaning of the payload bay; installing instrumentation for the flight readiness firing which is scheduled for March 19; work to ready the crew cabin for flight. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 18, 1992.]

COLUMBIA: MAIN ENGINES INSTALLED

Columbia's new main engines have been installed in preparation for its STS 50 flight. Work in progress: check out of the Extended Duration Orbiter (EDO) pallet; tests of the

Ku-band antenna and of the engines and main propulsion system. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 18, 1992.]

[] **DISCOVERY IN OPF BAY 2**

In Orbiter Processing Bay 2, workers have removed Discovery's left orbital maneuvering system pod and have deserviced freon coolant loop No. 1. Currently, the technicians are making extensive structural inspections, inspecting the radiators and making modifications to the Orbiter like those made previously to the Space Shuttle Columbia in Palmdale, CA. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 18, 1992.]

March 19: **STS 45 FORECAST: 40% FAVORABLE**

There is a 40 percent chance of having acceptable weather conditions at the opening of the launch window and a 50 percent chance for the entire launch period. Technicians at Launch Complex 39A have closed out the aft compartment (completed March 18); moved booster flame deflectors to the launch position; installed the crew escape pole and removed service platforms from the mobile launcher platform. Work in progress: launch countdown preparations; stowing crew equipment in the crew cabin; removing platforms from the flight deck; washing down the mobile launcher platforms and the flame trench; installing and filling the sound suppression water system bags. Six and one half hours after the launch countdown begins at noon on March 23, the STS 45 crew is expected to arrive at Kennedy Space Center. Launch is targeted for 8:01 a.m. EST on March 23. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 19, 1992; "Shuttle Atlantis On Schedule," FLORIDA TODAY, p. 8A, March 19, 1992.]

[] **STS 49: END-TO-END TEST COMPLETED**

Technicians have completed an end-to-end test of Endeavour's solid rocket boosters. STS 49 work in progress: flight readiness test of the main engines; preparations to load hypergolic propellants into the Orbiter; frequency response test of the solid rocket boosters hydraulically operated systems; cleaning of the payload bay; installing instrumentation for the flight readiness firing; work to ready the crew cabin for flight. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 19, 1992.]

[] **STS 50: COLUMBIA PROCESSING**

Work in progress on Columbia in OPF Bay 3 includes: check out of the Extended Duration Orbiter (EDO) pallet; tests of the Ku-band antenna and the engines and main propulsion system; electrical connections of the main engines and a single cell voltage test of the fuel cells. Meanwhile, Discovery is in OPF Bay 2 where technicians are drying the water loops; making leak checks of the main propulsion system; undertaking extensive structural inspections of the Orbiter and its radiators and beginning Orbiter modifications. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 19, 1992.]

March 20: **STS 45: SRBS CLOSED OUT**

At Launch Complex 39A, Atlantis awaits launch on its STS 45 mission. Pad technicians have closed out the Orbiter's solid rocket boosters, the external tank intertank, the auxiliary power units and ordnance devices for flight. Work in progress: launch countdown preparations and stowage of crew equipment in the crew cabin. Work scheduled: crew arrival; loading liquid oxygen and liquid hydrogen reactants into the

Orbiter's onboard storage tanks on March 21; moving the rotating service structure to the launch position by noon March 22; begin loading the external tank with its flight load of cryogenic propellants starting at 11:41 p.m. March 22. The countdown to launch begins at noon today. Launch remains targeted for 8:01 a.m., March 23. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 20, 1992; Halvorson, FLORIDA TODAY, p. 1A, March 20, 1992.]

[] **ENDEAVOUR: FRR COMPLETED FOR STS 49**

The Space Shuttle Endeavour has undergone two milestone tests in preparation for its maiden flight in early May of this year. A flight readiness test of the Orbiter's main engines has been completed as has a frequency response test of the solid rocket boosters hydraulically operated systems. Technicians are now preparing to load hypergolic propellants into the Orbiter; they are also cleaning the payload bay, installing instrumentation for the flight readiness firing, readying the crew cabin for flight and conducting leak checks of the APUs. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 20, 1992.]

[] **COLUMBIA: EDO PALLET CHECK-OUT**

In OPF Bay 3, the Extended Duration Orbiter (EDO) pallet is being checked out. In addition tests of the Ku-band antenna, the main engines and the main propulsion system are underway. The Orbiter's fuel cells are undergoing a single cell voltage test. The Orbiter midbody is being closed out. In OPF Bay 2, Discovery is being modified before its STS 53 mission. Technicians are drying the water loops, conducting leak checks of the main propulsion system, making extensive structural inspections, and removing the vehicle's radiators.[KSC SHUTTLE STATUS REPORT, 10 a.m., March 20, 1992.]

March 22: **WEATHER TO DETERMINE LIFTOFF**

Al Sofge, a KSC launch official, said today that "weather is the only cloud over the countdown" of STS 45. NASA Test Director **Eric F. Redding** said, "We're not looking at any technical problems." Weather concerns have reduced the likelihood of favorable weather to 20% at the opening of the launch window at 8:01 a.m. March 23. Capt. **Mike Adams** (45th Weather Squadron) said, "We have a whole score of weather concerns." These include: showers or thunderstorms; gusty crosswinds; layers of clouds more than 4,500 feet thick which might generate lightning and cloud decks too close to the ground. Tanking operations will proceed as usual. Launch Director **Robert B. Sieck** said, "We just want to be prepared, if the opportunity presents itself, to be ready to go. You never know with the weather. It doesn't have to be perfect; it just has to be good enough." The STS 45 crew includes Commander **Charles F. Bolden**, Pilot **Brian Duffy**, Mission Specialists **Kathryn D. Sullivan**, **David C. Leestma** and **Michael C. Foale** and Payload Specialists **Byron Lichtenberg** and **Dirk Frimout**. Lichtenberg said, "This is the first Space Shuttle mission dedicated to Earth observations, to looking at our environment, to understanding the atmosphere. So for all the taxpayers out there, this ATLAS is for you." [Banke, FLORIDA TODAY, p. 3A, March 23, 1992; Halvorson, FLORIDA TODAY, p. 5A, March 21, 1992.]

March 23: **STS 45 LAUNCH SCRUBBED**

When engineers detected leaks of oxygen and hydrogen from the rear engine compartment of Atlantis they scrubbed today's launch of the STS 45 mission. The leaks

were traced to seals in two 17-inch-wide pipelines funneling fuel for the external tank to the Orbiter's three main engines. Launch Director **Robert B. Sieck** said that the super cold propellants had caused the seals to contract and leak. Tests showed after the scrub that the leaks disappeared once temperatures stabilized during fueling operations, he said. The launch was rescheduled for 8:00 a.m. March 24. Sieck said, "I think the opportunity is good that we'll go fly." [Halvorson, FLORIDA TODAY, pp. 1A-2A, March 24, 1992.]

STS 45 RESCHEDULED

A decision has been made by NASA managers to make a second launch attempt of the Space Shuttle on March 24; the seven crew members had not yet boarded Atlantis. The countdown clock has been recycled to the T-11 hour mark and will resume counting at 6:40 p.m. Tanking of the vehicle will begin at 11:10 p.m. leading to a liftoff at exactly 8:00 a.m. Tuesday (March 24). There is a 70% chance of acceptable weather at the opening of the launch window, and an 80 % overall. Propulsion system engineers believe that the temporary liquid hydrogen and liquid oxygen leakage which was observed is the result of a seal between the external tank and the Orbiter which was not completely thermally conditioned. No leaks were observed outside the vehicle. Launch Director **Robert B. Sieck** was confident that the trouble was not a recurrence of the hydrogen leaks which grounded the fleet for almost half the year in 1990. He said that, in the past, metal components had been slow to adapt to the extremely cold temperature of the liquid fuel. Looking farther at the weather at 8:00 a.m. tomorrow at the opening of the window....the temperature is forecast to be 60 degrees, with a humidity of 83%, winds will be NNE at 10 knots with occasional gusts to 20 knots. There will be scattered to broken stratocumulus clouds from 4,000 to 6,000 feet. There is a slight chance of an isolated shower, an occasional cloud ceiling below 8,000 feet, or of a cross wind violation. Overall, the weather is rated as 70% favorable for launch March 24. The launch window on March 24 extends from 8 a.m. to 10:30 a.m. EST. [KSC Status Report, 10:15 a.m., March 23, 1992; see story below; "Fuel Leaks Ground Shuttle, Launch Is Reset for Today," THE WASHINGTON POST, March 24, 1992; "Shuttle Launch Pushed Back to Today Because of Fuel Leaks," THE WASHINGTON TIMES, March 24, 1992; Wilford, THE NEW YORK TIMES, March 24, 1992; Dunn, THE PHILADELPHIA INQUIRER, March 24, 1992.]

March 24: **STS 45 LAUNCH SUCCESS: LITTLE PAD DAMAGE**

Atlantis was launched from Launch Complex 39A at 8:13:40:0481 a.m. EST this morning after a brief delay called by flight controllers for the weather to clear at the Shuttle Landing Facility. Launch Commentator **George Diller** said, "The weather is always the wild card in any launch attempt. Obviously," he said, "if the crew has to turn around and come back (to KSC's Shuttle Landing Facility), they have to have a straight line of sight to the runway below 8,000 feet." Outgoing NASA Administrator **Richard H. Truly** said, "It was a beautiful sight. This is the 21st Shuttle flight in 42 months and that's quite a record. I think things are really on the move for the space program." A leak like the one which led to Monday's scrub of the mission recurred early in the tanking operation for Tuesday's liftoff, but it subsided to safe levels during the three-hour fueling operation. Mission Operations Director **Lee Briscoe** said, "The whole flight is going very well, with no problems to speak of." Minimal damage was reported at the launch pad. The solid rocket booster retrieval ships are towing the two STS 45 boosters. The Freedom Star is expected to be at the port at 4 p.m. and the Liberty Star is estimated to be at the port by 10 p.m. The Freedom is estimated to arrive at Hangar AF at 6:30 p.m. tonight and the

Liberty will probably remain at the port overnight and go up the Banana River to Hangar AF tomorrow. Atlantis' landing is planned on April 1 at 6:19 a.m. EST at KSC's Shuttle Landing Facility. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 25, 1992; Halvorson and Banke, FLORIDA TODAY, pp. 1A-2A, March 25, 1992; Wilford, THE NEW YORK TIMES, p. A9, March 25, 1992.]

ENDEAVOUR: STS 49 PROCESSING

At Launch Complex 39B, pad technicians continue to ready the Space Shuttle Endeavour for its May STS 49 mission. Work in progress: preparations to load hypergolic propellants into the orbiter; clearing the pad at 4 p.m. today; closure of the payload bay doors; installing instrumentation for the flight readiness firing; work to ready the crew cabin for flight; leak checks of the auxiliary power units. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 25, 1992.]

COLUMBIA: STS 50 PREPARATIONS

In Orbiter Processing Facility Bay 3 technicians are checking out the Extended Duration Orbiter (EDO) pallet in Columbia's cargo bay. Other work in progress includes: tests of the power reactant storage and distribution system; leak checks of the environmental control system fluid lines; close outs of the midbody. Work scheduled: tests of the main propulsion system helium regulators and installation of the forward reaction control system on March 28. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 25, 1992.]

DISCOVERY: OPF BAY 2

Leak checks are being performed on Discovery's main propulsion system while it is in Orbiter Processing Facility Bay 2 undergoing major modifications. There are also extensive inspections being conducted as well as modifications for the drag chute. Both freon lines of the Orbiter have been deserviced. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 25, 1992.]

March 26: **TEACHER MORGAN MAY FLY**

NASA Administrator **Richard H. Truly** said today that he supports using space to enhance education and that he will recommend to his successor, **Daniel S. Goldin**, that NASA fly **Barbara Morgan** as a teacher in space. Morgan was backup to the late **Christa McAuliffe** who was killed in the Challenger accident in January 1986. The following text is an excerpt from remarks Truly made while presenting NASA's Brewer Trophy: "As you know, I'll be leaving NASA very soon but, there is one more thing we need, I believe, to inspire our young people. The time has come to begin a formal program of teaching from space. We use the medium of space to enhance education in many areas. The next step for us will be to make routine a program of teaching from space by astronauts in space to take advantage of the weightless environment, the explanation of experiments that are on board the Space Shuttle and the view of Earth, the solar system, and the universe that the Space Shuttle provides. Later, we will continue the teaching from Space Station Freedom and I predict from the surface of the Moon and Mars.

"Earlier I pointed out that our astronauts have already proven their abilities as teachers. But to state the "Teaching From Space" Program in the most positive way, it is time that NASA kick off this endeavour by flying Barbara Morgan....Christa McAuliffe was one of the most inspiring people I have ever met. She was a hard working, devoted and created

teacher who understood how young people are attracted to the wonders of space exploration, just as she was. When given the opportunity to participate in this great adventure to help encourage America's young people to do better, she seized it; but fate intervened. Barbara Morgan is another great teacher. I talked with Barbara last night. She's participating in the National Science Teacher's Association Convention. She still is an elementary school teacher in McCall, Idaho. She's ready, the Space Shuttle is ready, and the American people are ready [for] the educational inspiration that flying Barbara will provide.

"We now have a substantial amount of experience with our new Space Shuttle program. I can tell you today that we have the highest confidence in it and the system we have designed to operate it. NASA senior management has reviewed this situation annually, and I am more than satisfied; I am eager. But for this opportunity to succeed, it must have the full support of the new NASA Administrator. Accordingly, I am making a recommendation to Dan Goldin that, once aboard and quickly, he take his own look and that he invite Barbara to join the crew of some appropriate mission. I have every confidence that this will happen soon." The Administrator made these remarks while presenting the National Aeronautics Association's Frank G. Brewer Trophy at the National Congress on Aviation and Space Education (Oklahoma City, OK). The trophy is the nation's highest award for contributions to aviation and space education. This year's recipient is Lt. Gen. **Kenneth L. Tallman** (USAF Ret.) [NASA/KSC News Release No. 92-40, March 26, 1992.]

RETRIEVAL SHIPS ARRIVE AT HANGAR AF

Both solid rocket booster retrieval ships have arrived at Hangar AF at the Cape Canaveral Air Force Station. The Freedom Star arrived at the dock with the left booster at 6:30 p.m. last night. The Liberty Star spent the night at Port Canaveral and made its way up the Banana River this morning and arrived at Hangar AF with the tight booster at 8 a.m. today. The left booster is on its dolly for post-flight safety and inspections. Technicians are hoisting the right booster onto its dolly today. Atlantis is scheduled to land at the Shuttle Landing Facility at 6:19 a.m. EST. [KSC SHUTTLE STATUS REPORT, 10 a. m., March 26, 1992.]

ENDEAVOUR: PROPELLANT LOADING

Endeavour's payload bay doors and leak checks of the Orbiter's auxiliary power units have been completed at Launch Complex 39B in preparation for the STS 49 mission. Work in progress: loading hypergolic propellants into the Orbiter. Hypergolic fuel and oxidizer propellants are being loaded into the Orbiter's storage tanks for the orbital maneuvering system engines and the reaction control system thrusters. In addition, hydrazine will be loaded onboard for the Orbiter's auxiliary power units and the boosters' hydraulic power units. The launch pad is closed to all non-essential personnel during this operation. The installation of instrumentation for the Flight Readiness Firing has been scheduled. [KSC SHUTTLE STATUS REPORT, 10 a. m., March 26, 1992.]

COLUMBIA: EDO CHECKOUT

The Space Shuttle Columbia is in Orbiter Processing Facility 3 where it is undergoing preparations for its STS 50 mission. Work in progress: check out of the Extended Duration Orbiter (EDO) pallet; tests of the power reactant storage and distribution system; leak checks of environmental control system fluid lines; close outs of the midbody; tests

of the interfaces between the main engines and the main propulsion system; tests of the communications systems; installing thermal control blankets into the forward reaction control system cavity. Work scheduled: tests of the main propulsion system helium regulators and installation of the forward reaction control system March 28. Discovery is in OPF Bay 2 for extensive modifications; the work in progress: leak checks of the main propulsion system; extensive structural inspections taking X-rays and modifications of the Orbiter's drag chute. [KSC SHUTTLE STATUS REPORT, 10 a. m., March 26, 1992.]

March 27: **ATLANTIS: SRB PROCESSING**

At Kennedy Space Center, the thrust vector control systems on both of Atlantis' solid rocket boosters have been depressurized and hydrolasing operations are underway on the tunnel covers to remove the close out material. The STS 45 mission of Atlantis is scheduled to conclude with a landing at KSC's Shuttle Landing Facility at 6:19 a.m. EST on April 1. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 27, 1992.]

ENDEAVOUR: STS 49 PAD PREPARATIONS

In preparation for Endeavour's STS 49 mission, nitrogen tetroxide has been loaded into the Orbiter's storage tanks for the orbital maneuvering system engines and the reaction control system thrusters. In addition, hydrazine will be loaded onboard for the Orbiter's auxiliary power units and the boosters' hydraulic power units. The launch pad will be closed to all nonessential personnel through tonight when this operation is complete. Work scheduled: installation of instrumentation for the Flight Readiness Firing is targeted for April 6 at 11 a.m. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 27, 1992.]

COLUMBIA: TESTS AND CHECKOUTS

In preparation for Columbia's STS 50 mission, technicians in OPF Bay 3 are testing the main propulsion helium system regulators. Other work in progress includes: preparations to install the forward reaction control system; checkout of the Extended Duration Orbiter (EDO) pallet; installing heat shields around the main engines; leak checks of the environmental control system fluid lines; closeouts of the midbody; installing thermal control blankets into the forward reaction control system cavity. On March 28, the forward reaction control system will be installed. Discovery is undergoing leak checks of the main propulsion system; extensive structural inspections using X-rays; Orbiter modifications and drag chutes modifications. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 27, 1992.]

GOLDIN PLEDGES CONSULTATION WITH CONGRESS

"I will consult with you (the U. S. Congress) on a regular basis, and I will be in charge of NASA," said **Daniel Goldin**, President **Bush**'s nominee to be Administrator of NASA. U. S. Senator **Al Gore** (D-TN) said, "I welcome the forcefulness of that statement. You know very well that NASA as an institution is now faced with the problem of the space council expanding its role from what some of us regard as a quite legitimate role in looking at policy. But interference in the management decisions of the NASA Administrator crosses the line." Goldin said he had discussed the issue with both President Bush and Vice President J. **Danforth Quayle**; he said, "I think both of them want me to be in charge." [Lunner, FLORIDA TODAY, p. 4A, March 28, 1992; Eisler, FLORIDA TODAY, April 1, 1992.]

JAMES E. WEBB DIES

James E. Webb, NASA Administrator when **Neil Armstrong** stepped out onto the moon's surface, died at Georgetown Hospital in Washington, D.C. Webb's eight-year tenure as head of NASA culminated with the Apollo 11 landing. **Julian Scheer**, an aide to Webb said the Apollo Program "has been likened to the Manhattan Project as one of two greatest managerial efforts in modern government." ["Man Who Guided U.S. to Moon Dies at 85," FLORIDA TODAY, p. 1A, March 29, 1992; "NASA Pioneer Dies," USA TODAY, p. 3A, March 29, 1992; Lambert, THE NEW YORK TIMES, p. 19, March 29, 1992; "Former NASA Chief Webb Led Moon-Landing Project," THE ORLANDO SENTINEL, March 30, 1992.]

March 30:

HYDROLASING STS 45 BOOSTERS

Hydrolasing activities are continuing on both solid rocket boosters to remove the thermal protective foam. Atlantis' mission has been extended one day and the end-of-mission landing is now scheduled for April 2 at 6:24 a.m. EST at Kennedy Space Center's Shuttle Landing Facility. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 30, 1992.]

ENDEAVOUR: HYPERGOLIC FUEL LOADED

At Launch Complex 39B, hypergolic fuel has been loaded into Endeavour's storage tanks for the orbital maneuvering system engines and the reaction control system thrusters. Additionally, hydrazine was loaded onboard for the Orbiter's auxiliary power units and the boosters' hydraulic power units. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 30, 1992.]

COLUMBIA: HEAT SHIELDS INSTALLED

Columbia's heat shields have been installed around its three main engines and the main propulsion system helium regulators have been tested. Work in progress: check out of the Extended Duration Orbiter (EDO) pallet; leak checks of environmental control system fluid lines and close outs of the midbody. On April 1, Columbia's forward reaction control system will be installed. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 30, 1992.]

DISCOVERY MODIFICATIONS

Leak checks of Discovery's main propulsion system are underway in OPF Bay 2; extensive structural inspections have begun using X-rays and the Orbiter's drag chute is being modified as one of many changes being made in the vehicle. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 30, 1992.]

March 31:

ENDEAVOUR: ENGINE INTERFACE RETESTED

At Launch Complex 39B, Endeavour's engine interface unit No. 1 has been retested. Work in progress: firing room simulation of the Flight Readiness Firing; installation of instrumentation for the FRF; close out of the avionics bay and the aft compartment; installation of thermal blankets for the water spray boilers. The FRF countdown begins April 3 leading to a 32-second burn at 11 a.m. on April 6. Meanwhile, hydrolasing activities - the removal of foam residues - are continuing on both of Atlantis' solid rocket boosters and KSC is awaiting the Orbiter's landing at 6:24 a.m. on April 2 at the Shuttle Landing Facility. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 31, 1992.]

COLUMBIA: FRC INSTALLATION SCHEDULED

Technicians in OPF Bay 3 will install Columbia's forward reaction control (FRC) system tomorrow (April 1). Other processing work on the Orbiter: check out of the Extended Duration Orbiter (EDO) pallet; leak checks of the environmental control system fluid lines; installation of thermal blankets in the Orbiter's midbody. In OPF Bay 2, Discovery is undergoing extensive structural inspections using X-rays and this operation is 75% complete. Orbiter modifications, including to the vehicle's drag chute, are also underway. [KSC SHUTTLE STATUS REPORT, 10 a.m., March 31, 1992.]

SPACEHAB DEDICATION CEREMONY SET/APRIL 3

Kennedy Space Center Director **Robert L. Crippen**, former Administrator **James Beggs** and astronaut **G. David Low** will be among the keynote speakers at a press briefing and dedication ceremony for the Spacehab Payload Processing Facility (SPPF) and first Spacehab module. The event will occur at the Port Canaveral facility on Friday, April 3 at 10:00 a.m. Spacehab, Inc. is a commercial space company that will lease environmentally controlled laboratory modules for flight aboard the Space Shuttle. Each Spacehab module adds 1,100 cubic feet of pressurized working area to the Space Shuttle. The reusable Spacehab is first scheduled to fly aboard STS 57, expected to launch in June 1993. The SPPF is a 37,000-square-foot facility that will be used to check out and integrate payloads for flight inside the Spacehab module; it includes a clean room, 11 integration and checkout areas and office space. Spacehab is the first habitable space structure ever developed and funded entirely by private industry; it was developed and produced by McDonnell Douglas Space Systems Company under contract from Spacehab, Inc. [NASA/KSC News Release No. 41-92, March 31, 1992.]

GOLDIN CONFIRMED TO HEAD NASA

Daniel S. Goldin was confirmed as Administrator of NASA by the U. S. Senate on a voice vote. Former Kennedy Space Center Director **Forrest S. McCartney** said, "I think that's great. He is well suited for the job and the nation is fortunate to have a man of that caliber leading the agency. I'm sure he will do an outstanding job." Goldin is expected to make his first appearance as Administrator tomorrow when Atlantis lands at KSC. Yesterday, **William Lenoir**, Director of Space Flight for NASA announced his resignation. [Eisler, FLORIDA TODAY, April 1, 1992; Holton, THE ORLANDO SENTINEL, pp. A-1 & A-7, March 31, 1992.]

APRIL

April 1: **ATLANTIS: ON ORBIT**

Hydrolasing activities are continuing on both solid rocket boosters to remove the thermal protective foam. Meanwhile, Atlantis' end-of-mission landing is scheduled for Thursday (April 2) at Kennedy Space Center [see below]. Weather conditions are favorable, but there is a chance of ground fog. Once on the ground, the Shuttle processing team will safe the Orbiter and the flight crew will emerge from the crew cabin. Atlantis will be towed to the Orbiter Processing Facility Bay 1 about three hours after landing for post-flight inspections. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 1, 1992; Date, THE ORLANDO SENTINEL, P. A-3, March 30, 1992.]

ENDEAVOUR: FRF SIMULATION COMPLETED

Firing Room simulation of the Flight Readiness Firing of Endeavour has been completed in the LCC at KSC. Thermal blankets for the water spray boilers have also been installed. Work in progress: purges of the external tank; installing thermal curtains in the right hand solid rocket booster aft skirt; installation of instrumentation for the FRF; closeouts of the avionics bays and the aft compartment; preparations to install the blast doors on the aft compartment; installation of thermal blankets in the aft compartment. The FRF is scheduled for April 6. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 1, 1992; NASA/KSC News Release No. 45-92, April 3, 1992.]

COLUMBIA: FRC INSTALLED

In OPF Bay 3, Columbia's forward reaction control system has been installed. Work in progress: replacement of a leaking oxidizer tank on the Extended Duration Orbiter (EDO) pallet; leak checks of the environmental control system fluid lines; closeouts of the midbody; installing thermal blankets in the midbody. Meanwhile, in OPF Bay 2, Discovery continues to undergo extensive modifications like those Columbia had in 1991. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 1, 1992.]

TOPPING OFF CEREMONY SET: SSPF

KSC engineering and Space Station Freedom team members will celebrate a milestone in the construction of the Space Station Processing Facility (SSPF) on April 3 when the final structural steel beam is hoisted atop the giant building. Movement of the beam and subsequent remarks from KSC officials are scheduled to begin at 2 p.m. The SSPF will be a KSC-operated facility occupied by about 1,000 NASA and contractor employees. The three-story SSPF will include communications and electrical control areas, laboratories, logistics staging areas, operational control rooms, office areas and a cafeteria. The SSPF is the biggest new construction effort undertaken at KSC since the Apollo era. Construction began in March 1991 and the building is scheduled to be ready for occupancy by August 1994. The building was designed by Jacobs Engineering Group, Inc. (Lakeland, FL) and is being constructed by Metric Constructors, Inc. (Tampa, FL). [NASA/KSC News Release No. 42-92, April 1, 1992.]

SENATE CONFIRMS GOLDIN FOR NASA

The U.S. Senate, in a voice vote, confirmed **Daniel S. Goldin** to succeed **Richard H. Truly** as NASA's next Administrator. Former KSC Director **Forrest S. McCartney** said of the

confirmation: "I think that's great. He is well suited for the job and the nation is fortunate to have a man of that caliber leading the agency. I'm sure he will do an outstanding job." [Eisler, FLORIDA TODAY, p. 1A, April 1, 1992.]

April 2:

STS 45 LANDS AT KSC

Atlantis' end-of-mission landing occurred at 6:23 a.m. EST today on Runway 33 at the Kennedy Space Center Shuttle Landing Facility. The main gear touched down at 6:23 a.m., the nose gear touched down at 6:23:14 and the wheels stopped at 6:24:04 a.m. for a total mission elapsed time of 8 days, 22 hours and 9 minutes. The Orbiter rollout distance on the runway was about 9217 feet. The flight crew members departed in the afternoon from KSC to return to the Johnson Space Center (Houston, TX) for post-flight follow-up exams and other activities. KSC's processing team towed the Orbiter to the OPF by 1 p.m. Initial assessments of the vehicle indicates that the vehicle is in good shape. Overall, the tiles look good with the exception of a ding on the No. 10 reinforced carbon panel on the right hand wing. That panel will be replaced before the next flight. Ordnance devices will be safed tomorrow (April 3) and preparations are underway to install the payload bay door strongbacks. The doors are scheduled to be opened April 6 and the ATLAS payload is scheduled for removal April 7. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 3, 1992; Brown, FLORIDA TODAY, p. 1A, April 2, 1992; Halvorson, FLORIDA TODAY, pp. 1A-2A, April 3, 1992; "Shuttle Lands in Florida After 9-Day Mission," THE NEW YORK TIMES, p. A7, April 3, 1992.]

GOLDIN VIEWS STS 45 LANDING

New NASA Administrator **Daniel S. Goldin** was on hand at Kennedy Space Center to witness the landing of Atlantis at the conclusion of its STS 45 mission. At his press conference, he spoke of NASA's mission for the future: "It's the objective of NASA to really put the details to that program [return to the moon and to Mars] so the American public understands it. I want to spend the time with NASA folks to see what we have to do as the precursor steps: How can we retire the risk by doing the right things before spending significant amounts of money. We can't have NASA trying to do too many things at once and not to be in step with the total budget situation in this country," he said. "We're going to have a national consensus on that program, and I'm committed to making it happen." [Brown, FLORIDA TODAY, p. 1A, April 3, 1992; Date, THE ORLANDO SENTINEL, p. A-3, April 3, 1992.]

ENDEAVOUR: AFT CLOSED FOR TEST

Endeavour's aft compartment has been closed in preparation for the Flight Readiness Firing scheduled for 11 a.m., April 6. The countdown for the firing begins today at 2 p.m. EST at the T-43 hour mark. Technicians at Launch Complex 39B are setting up measuring devices on the tail service mast and conducting final walkdowns and inspections. Endeavour's fuel cell storage tanks will be loaded tomorrow (April 4) with cryogenic reactants. The rotating service structure will be moved back at 1 p.m., April 5 and tanking will begin at 3:40 a.m. April 6. Launch Director **Robert B. Sieck** said of the test, "An FRF is the most dynamic ground test that the KSC team performs. The team has been involved in intensive planning and work at the pad these past several weeks to get ready. We're looking forward to pulling this test off crisply."

The FRF will provide an opportunity to test critical elements of the Shuttle Endeavour as a fully integrated vehicle in the KSC launch environment. It will provide confidence in the

performance of the vehicle's systems. Test objectives include assessing the integrity and performance of the main propulsion system of the Orbiter, engines and the external tank. The compatibility and functional performance between the launch facility and Endeavour's umbilical interfaces will be verified. Engineers will establish leak values for Endeavour's main propulsion system. All Orbiters have a minimal amount of acceptable leakage. Actual performance will be assessed of all vehicle elements and supporting pad systems. The test will also demonstrate the capability of the avionics equipment to effectively monitor and control the active vehicle under dynamic pre-liftoff, vibro-acoustic conditions. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 3, 1992; NASA/KSC News Release No. 45-92, April 3, 1992; Banke, FLORIDA TODAY, pp. 1A-2A, April 6, 1992; Halvorson, FLORIDA TODAY, p. 4A, April 4, 1992.]

COLUMBIA: PALLET TANK REPLACED

A leaking oxidizer tank on the EDO pallet in Columbia has been replaced. In OPF Bay 3, technicians' work in progress includes: electrical connections of the newly installed oxidizer tank on the EDO; testing of the forward reaction control system; closing out of the midbody and installation of thermal blankets in the midbody. In OPF Bay 2, Discovery continues to undergo modifications to its drag chute and to the Orbiter itself. Inspection of the Orbiter using X-rays continues, as well. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 3, 1992.]

April 4: **EXTERNAL TANK FILLED**

Technicians will load cold propellants into Endeavour's external tank today in preparation for its Flight Readiness Firing. The Rotating Service Structure will be moved back at 1:00 p.m. [Halvorson, FLORIDA TODAY, p. 4A, April 5, 1992.]

KSC POTATOES HARVESTED

A second crop of potatoes has been harvested from inside a bubble-shaped biomass chamber at Kennedy Space Center called the Closed Ecological Life Support System (CELSS). The potatoes were grown without soil in a simulated space environment to aid astronauts who must raise their own food on long-duration space flights. ["Researchers Grow Space Spuds at KSC," FLORIDA TODAY, p. 10E, April 5, 1992.]

April 6: **STS 49: FRF COMPLETED**

The Flight Readiness Firing occurred this morning at 11:12 a.m. EDT and lasted for 22 seconds. The initial evaluation indicated that the test went well; engineers are analyzing the data. "It's just a little bit of an unnatural act just keeping it tied down and making those engines run," said STS 49 Commander **Daniel C. Brandenstein.** "But we believe very strongly that (the readiness firing) is an essential part of getting the vehicle ready for the first time it flies." Brandenstein will command Endeavour's maiden mission next month. The test went so well, according to Shuttle Program Director **Leonard S. Nicholson,** that Endeavour's first launch could come on May 5 rather than May 7. Launch Director **Robert B. Sieck** said, "It's a good test to have behind us." Post FRF operations are continuing at Launch Complex 39B and a gaseous hydrogen injection test is underway in the Orbiter's aft compartment. Work scheduled: deconfiguration of the launch pad from the FRF mode; STS 49 payloads transfer to the launch pad during the weekend; post-FRF inspections of the main propulsion system and main engines; Terminal Countdown Demonstration Test with the flight crew is planned for April 17. [KSC

SHUTTLE STATUS REPORT, 2:30 p.m., April 6, 1992; "Shuttle Test," USA TODAY, p. 3A, April 6, 1992; Halvorson, FLORIDA TODAY, p. 2A, April 7, 1992.]

DELTA SET TO LAUNCH

The launch window for tonight's launch of a Delta 2 rocket will be from 11:20 until 11:50 p.m. The flight was originally scheduled for April 2 and has been postponed twice due to high winds. The rocket will carry a Navstar satellite into orbit. ["Delta 2 Launch Set for Thursday," FLORIDA TODAY, p. 2A, April 6, 1992.]

STS 50: PRE-MATE TESTING

In OPF Bay 3, Columbia is being prepared for payload pre-mate testing; the midbody is being closed out and thermal blankets are being installed in the midbody. Atlantis, now in OPF Bay 1, is undergoing post-flight inspections and tests and preparations to remove the ATLAS payload from the payload bay. Atlantis' next mission (STS 46) will carry the TSS and EURECA payloads. Discovery - in OPF Bay 2 - is undergoing modifications. Structural inspections of the vehicle have been completed. [KSC SHUTTLE STATUS REPORT, 2:30 p.m., April 6, 1992.]

April 7:

STS 49: HYDROGEN TEST COMPLETE

Engineers continue to analyze the data accumulated from yesterday's Flight Readiness Firing of Endeavour's main engines at Launch Complex 39B. Technicians at the pad have also completed a gaseous hydrogen injection test in the Orbiter's aft compartment. Work in progress: post flight readiness firing operations at the launch pad; gaining access to the aft compartment; connecting the Orbiter midbody umbilical unit to the Orbiter; preparations to offload reactants from the fuel cell storage tanks; raising engine service platforms on the launch platform. Work scheduled: STS 49 payloads transfer to the launch pad this weekend; post-FRF inspections of the main propulsion system and main engines; Terminal Countdown Demonstration Test with the flight crew on April 17. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 7, 1992; Date, THE ORLANDO SENTINEL, p. A-3, April 7, 1992.]

COLUMBIA: AMMONIA SYSTEM SERVICED

Columbia's ammonia system has been serviced in OPF Bay 3 and the forward reaction control system has been checked out. Work in progress: payload pre-mate testing; Ku-band antenna testing; midbody closeouts; installation of midbody thermal blankets; closeouts of the EDO. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 7, 1992.]

ATLANTIS: FAUST PAYLOAD REMOVED

In Orbiter Processing Facility Bay 1 technicians have removed the FAUST payload from the cargo bay of Atlantis. Work in progress: post-flight inspections and tests; preparations to remove he ATLAS payload; cleaning of the vehicle's radiators; removing the wheels; preparations to offload residual hypergolic propellants from the Orbiter. In OPF Bay 2, Discovery continues to undergo extensive modifications; workers are preparing to install the Orbiter's radiators. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 7, 1992.]

April 8: **NEW ENGINES FOR ENDEAVOUR**

Following a final review of information from Endeavour's flight readiness firing, two irregularities were identified in two engines and Shuttle managers have decided to remove and replace Endeavour's three main engines prior to STS 49. Replacing the main engine adds, at most, one or two days of work to the launch preparations already under way, and launch of STS 49 in the first week of May is still anticipated. An official launch date will be announced by managers following the STS 49 Flight Readiness Review now scheduled for April 21. Despite damage to its three main engines and their imminent replacement, NASA officials say a repeat of the FRF will not be necessary. "The test is mostly for checking out the Orbiter and its internal plumbing, not the engines," according to **Keith Hudkins**, Chief of the Orbiter Division at NASA Headquarters (Washington, D.C.) Engine replacement is less time consuming than replacing faulty components within the three engines which were damaged during the test; three spare engines are ready for installation presently. None of the problems were described as major or potentially life-threatening to the Endeavour crew. A review of test results showed a possibly damaged main combustion chamber in engine No. 1; a vibration problem with a bearing assembly inside the turbopump of engine No. 2; like engine No. 1, engine No. 3 also backfired and may have been damaged in a similar fashion. At Launch Complex 39B, workers have completed the offloading of reactants from Endeavour's fuel storage cells. Work in progress for the Orbiter's upcoming STS 49 mission: post-flight readiness firing operations at the launch pad; gaining access to the aft compartment; raising engine service platforms on the launch platform; circulating hydraulic fluid; analysis of FRF data from the main engines and main propulsion system; analysis of the performance of high pressure oxidizer turbopumps on main engines No. 1 and 2. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 8, 1992;NASA/KSC News Release, "STS-49 Endeavour Launch Processing Status," April 8, 1992; Banke, FLORIDA TODAY, p. 1A, April 9, 1992;"Shuttle Problem," USA TODAY, p. 3A, April 9, 1992; Date, THE ORLANDO SENTINEL, April 9, 1992.]

COLUMBIA: STS 50 PROCESSING

In OPF Bay 3, Columbia continues to undergo pre-mate and Ku-band antenna testing; midbody work includes the installation of thermal blankets and closeouts. The EDO is also being closed out. The USML (United States Microgravity Laboratory) will be installed over the weekend. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 8, 1992.]

ATLANTIS/DISCOVERY UPDATE

The ATLAS payload has been removed from the cargo bay of Atlantis and the Orbiter's auxiliary power units have been deserviced Work in progress on Atlantis: fit checks of the rotational hand controller with members of the flight crew; post-flight inspections and tests; cleaning the radiators; removing the wheels. Discovery has had its radiators installed and continues to undergo extensive modifications. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 8, 1992.]

April 9: **DELTA: THIRD LAUNCH ATTEMPT TODAY**

The third try to launch the Air Force's Delta 2 was successful late this evening. Despite the threat of lightning from clouds near Launch Complex 17B, an Air Force Delta 2 made third launch attempt tonight during a window which extended from 11:20 to 11:50 p.m. Meteorologists said that there was an 80% chance weather favorable for liftoff. Previous

attempts to launch on April 3 and 4 were postponed due to high winds in the launch area. The payload was a Navstar Global Positioning Satellite, a 4,000-pound spacecraft; it will assist both civilians and the military with navigation. The next Delta 2 launch - no earlier than May 7 - will boost the Palapa-B4 communications satellite into space for the Indonesian government. ["Delta Gets 3rd Chance Today," FLORIDA TODAY, p. 4A, April 9, 1992; "Satellite Placed Safely In Orbit," FLORIDA TODAY, p. 4A, April 11, 1992.]

ENDEAVOUR: ACCESS TO AFT COMPARTMENT

Workers at Launch Complex 39B gained access today to the aft compartment of Endeavour. They removed foam from the joints between the main propulsion system and the three main engines and from other areas to allow inspections. They also began removing instrumentation used in the flight readiness firing, heat shields from the main engines and prepared to install the STS 49 payloads. Work scheduled: moving the rotating service structure away from the Orbiter overnight in preparation for payload installation; transfer of the STS 49 payloads to the launch pad; removal of the radiation blast shield tomorrow; post-FRF inspections of the main propulsion system. Managers decided last night to replace the three main engines following review of irregularities in two of the high pressure oxidizer turbopumps. The engine one pump saw a build up of pressure in the preburner just after it was shut down and engine two saw a slightly elevated frequency in vibration in the ball bearing cage. This work, scheduled to begin Sunday, is expected to have little impact on the processing schedule. Referring to the need to changeout the engines, KSC spokesman **Bruce Buckingham** said, "It will take a full week to do it, but that's not any extra time in the long run, because it would have taken longer to replace" damaged components in the engines. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 9, 1992; Halvorson, FLORIDA TODAY, p. 9A, April 10, 1992; Halvorson, FLORIDA TODAY, April 12, 1992.]

COLUMBIA: STS 50 PROCESSING

The Space Shuttle Columbia, in OPF Bay 3, is undergoing payload pre-mate and Ku-band antenna testing. Other activities include: close outs of the midbody; installation of thermal blankets in the midbody; closeouts of the EDO and testing of the water spray boilers. The USML (United States Microgravity Laboratory) payload is scheduled for installation on April 11. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 9, 1992.]

PROCESSING REPORT: ATLANTIS AND DISCOVERY

Work in progress on Atlantis includes: polishing windows; inspections of the main propulsion system; removal of the SSBUV payload; offloading of residual hypergolic propellants; removing heat shields and carrier panels from around the main engines; deconfiguring the payload bay. Discovery's processing activities: Orbiter modifications; installation of radiators; structural inspections; installation of the drag chute. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 9, 1992.]

April 10: **STS 49: PAYLOADS TRANSFERRED**

The payloads for STS 49 were transferred to Launch Complex 39B overnight and the rotating service structure was moved away from Endeavour in preparation for installing the payloads. Work in progress: removing foam from the joints between the main propulsion system and the three main engines and from other areas to allow inspections; removing instrumentation used in the FRF; removing heat shields from the main engines

and the radiation blast shield. Scheduled work: installation of the payloads April 14; post-FRF inspections of the main propulsion system; KSC Launch Readiness Review on April 16; Terminal Countdown Demonstration Test (TCDT) April 17; the STS 49 Flight Readiness Review is planned for April 21. The launch of a Delta 2 rocket by the Air Force on May 7 may impact the May launch of Endeavour. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 10, 1992; Banke, FLORIDA TODAY, p. 4A, April 11, 1992.]

STS 50: USML-1 PAYLOAD INSTALLATION

In OPF Bay 3, technicians are preparing to install Columbia's United States Microgravity Laboratory-1 (USML-1) payload April 11. Other work in progress includes: closeouts of the midbody; installing thermal blankets in the midbody; closeouts of the Extended Duration Orbiter (EDO) pallet; testing of the water spray boilers. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 10, 1992.]

STS 46/TSS & EURECA

Technicians working on the Space Shuttle Atlantis in OPF Bay 1 have removed the vehicle's waste containment system, the SSBUV payload and the main landing gear wheels. They are also polishing Orbiter windows, inspecting the main propulsion system, removing heat shields and carrier panels from around the main engines and deconfiguring the payload bay. In OPF Bay 2, Discovery continues to undergo modifications; the radiators and drag chute have now been installed. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 10, 1992.]

April 11: **VAB RENOVATION PROCEEDING**

Despite the possible cancellation of the Advanced Solid Rocket Motor Program (ASRM), plans to renovate the Vehicle Assembly Building (VAB). The new, heavier boosters would require new cranes to move them in the VAB. "Consequently, we are faced with a situation that we need to make the modifications, some of them with or without the ASRM Program," said **Wes Dean**, Director of Procurement at KSC. Other planned modifications: a roof maintenance platform seven feet below the VAB's 4-inch thick concrete roof and reinforcement of the building's steel framework to accommodate two new 325-ton cranes which are due to replace two 250-ton cranes. [Banke, FLORIDA TODAY, April 12, 1992.]

April 12: **ENGINE REPLACEMENT FOR ENDEAVOUR**

Technicians at Launch Complex 39B today will begin to replace Endeavour's three main engines. "It is harder to do it at the pad than in the Orbiter Processing Facility, but we've replaced engines out there before," said **Lisa Malone**, KSC spokeswoman. The major difference is position; in the OPF, the Orbiter is horizontal, and, at the pad, the Orbiter is vertical. Replacing all three engines should take most of this week. The seven-member crew of Endeavour will arrive at Kennedy Space Center late on April 14 and KSC managers will meet on April 16 to discuss the center's readiness to launch Endeavour; the Flight Readiness Review will take place at KSC on April 21. [Banke, FLORIDA TODAY, p. 1A, April 12, 1992; Brown, FLORIDA TODAY, p. 1A, April 13, 1992.]

April 13: **STS 49: PAYLOAD SECURED**

The payload of Endeavour for its upcoming STS 49 mission has been secured in the changeout room at Launch Complex 39B; that was accomplished by 2:30 p.m. today.

Main propulsion system interface inspections and blast shield and rail removal have also been completed at the pad. Work in progress: main engine removal and replacement and opening of the payload bay doors. Space Shuttle Main Engine (SSME) No. 1 has been removed and its replacement will be installed today. KSC spokesman Bruce Buckingham said, "For the most part, they're going to meet their schedule." Work scheduled: continued replacement of SSMEs with completion of the task coming April 17; installation of payload into Orbiter payload bay on April 14; Terminal Countdown Demonstration Test this week; crew arrival tomorrow and LRR for April 16. Launch remains targeted unofficially for May 5. [Halvorson, FLORIDA TODAY, p. 10E, April 12, 1992; KSC SHUTTLE STATUS REPORT, 11:00 a.m., April 13, 1992; Brown, FLORIDA TODAY, p. 2A, April 14, 1992.]

COLUMBIA: MATING COMPLETED

Mating operations connecting Columbia's external tank to its solid rocket boosters have been completed in OPF High Bay 3; the USML payload has been transferred from the Operations and Checkout Building to the OPF and functional tests of the external tank/Orbiter umbilical doors are now finished. Work in progress: installation of the USML payload into the Orbiter payload bay; payload bay cleaning and potable water servicing. Both the drag chute and the payload tunnel are scheduled for installation in Columbia. [KSC SHUTTLE STATUS REPORT, 11:00 a.m., April 13, 1992.]

ATLANTIS/DISCOVERY PROCESSING

Post-flight deservicing and APU catch bottle drain and deservicing of Atlantis have been completed. Work in progress: main propulsion system leak checks and removal of main engine dome heat shields. Modifications of Discovery continue while technicians prepare to install the Orbiter's payload bay radiators. [KSC SHUTTLE STATUS REPORT, 11:00 a.m., April 13, 1992.]

April 14: **STS 49: PAYLOAD BAY DOORS OPEN**

At Launch Complex 39B, the payload bay doors of Endeavour have been opened and the cargo has been installed; main propulsion system interface inspections have been also completed. Work in progress: removal of main engine number 2 and its replacement is underway; only main engine number 3 remains to be removed and replaced. Workers are also installing the mission payload in the cargo bay. "The work is going well and we are on our schedule for engine replacement. We expect to have all three engines replaced by Friday (April 17). Scheduled work: continue replacement of SSMEs; Terminal Countdown Demonstration Test this week with the crew arriving late tonight; Launch Readiness Review set for April 16; Flight Readiness Review set for April 17. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 14, 1992; Banke, FLORIDA TODAY, April 15, 1992.]

STS 50: USML INSTALLATION

The STS 50 payload - USML - has been installed in Columbia's cargo bay; mating operations connecting the external tank to the Orbiter's solid rocket boosters and external tank/Orbiter umbilical doors functional testing have been completed. Work in progress: USML mechanical mates to the Orbiter; potable water servicing; water spray boiler checks. Work scheduled: payload electrical mates; payload tunnel installation; drag

chute installation and landing gear functional tests. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 14, 1992.]

ATLANTIS/DISCOVERY PROCESSING

In OPF Bay 1, technicians processing Atlantis have completed post-flight deservicing, main engine test shield removal and APU catch bottle drain and deservicing. Work in progress: main propulsion system leak checks; engine drying operations and leading edge RCC panel #10 replacement. In OPF Bay 2, Discovery continues Orbiter modifications; radiators have been installed and ammonia boiler leak checks have been conducted. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 14, 1992.]

April 15: **ENDEAVOUR: PAYLOAD INSTALLATION**

At Launch Complex 39B, the installation of the Intelsat booster and ASEM payloads into the Space Shuttle Endeavour was completed at 5:50 p.m. April 14. All of the electrical conditions with the Orbiter had been completely established by 10:55 p.m. At 10 a.m. this morning workers began the Interface Verification Test (IVT) to verify the electrical connections; it is scheduled to be completed at about 4 p.m. today. The STS 49 astronauts arrived last night from Houston, TX, by T-38 jets at 11:10 p.m.; they are scheduled to conduct a payload inspection at 1 o'clock on the afternoon of April 16. Over the next two days, the crew will have emergency egress training at the launch pad and have fit checks of their helmets, gloves and launch and entry suits. The crew will be aboard Endeavour for the last three hours of the countdown dress rehearsal and will interface with the launch team in Firing Room 1. The clock will begin counting for the test at 8:30 a.m. April 16. The main engine replacement on the Space Shuttle Endeavour began Sunday and is continuing on schedule. The number 2 engine was removed yesterday and the replacement is being installed today. The last engine - number 3 - will be removed tomorrow (April 16) and be replaced on April 17. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 15; Banke, FLORIDA TODAY, p. 2A, April 15, 1992; "Space Shuttle Endeavour to Undergo Engine Test," THE ORLANDO SENTINEL, April 16, 1992.]

April 16: **STS 49: PAYLOAD INSTALLED**

The Intelsat booster has been installed in Endeavour's payload bay at Launch Complex 39B and payload integration verification tests have been completed. Work in progress: SSMEs 1,2 and 3 have been removed; replacement SSMEs 1 and 2 have been installed and replacement SSME 3 will be delivered to the pad today and installed tonight; solid rocket booster closeout work; TCDT began today at 8:30 a.m. EDT; Launch Readiness Review is scheduled for 1:00 p.m. EDT today. Work scheduled: continued replacement of SSMEs; Flight Readiness Review set for April 22 at KSC; inertial measurement unit calibrations; APU leak checks. [KSC SHUTTLE STATUS REPORT, 10:00 a.m., April 16, 1992.]

STS 50: CHECKS AND TESTS

In OPF High Bay 3, technicians have completed USML mechanical mates to Columbia; hydraulic line checks and landing gear functional tests. Work in progress: USML electrical mates to the Orbiter and drag chute modifications and installation preparations. Work scheduled: payload tunnel adapter installation and payload integration verification tests. [KSC SHUTTLE STATUS REPORT, 10:00 a.m., April 16, 1992.]

ATLANTIS PROCESSING

In OPF Bay 1, technicians have completed main propulsion system leak checks on Atlantis in addition to engine drying operations and leading edge RCC panel replacement. Work in progress: power reactant storage and distribution systems test; payload bay vent filter checks; APU lube oil flush preparations; aft flight deck and midbody deconfigurations. Discovery, in OPF Bay 2, continues to undergo modifications including freon coolant loop leak checks. [KSC SHUTTLE STATUS REPORT, 10:00 a.m., April 16, 1992.]

SILT SITE DISCUSSED

The Florida Inland Navigation District met with NASA representatives, the Merritt Island National Wildlife Refuge and the U. S. Army Corps of Engineers to discuss NASA's use of land on the Indian River. FIND Assistant Executive Director **David Roach** said, "We still have a lot of things to work through, but we're feeling very positive about this site..." which "has been used for fill in road and building construction around the area. We're going to try and put nature back." [Nicholson, FLORIDA TODAY, p. 2B, April 17, 1992.]

April 17, 1992

FINAL SSME INSTALLED

The Space Shuttle Endeavour, being readied for its STS 49 mission at Launch Complex 39B, now has a full complement of three new engines. The last, #3, was installed last night. The Launch Readiness Review has been completed as have payload integration and payload integration verification tests. Work in progress: TCDT began at 11:00 a.m. this morning; solid rocket booster closeout work; solid rocket booster accumulator installation; main engine service platform and heat shield installation. Work scheduled: FRR scheduled for April 22 at Kennedy Space Center; inertial measurement unit calibrations; auxiliary power unit leak checks; flight readiness test for main engines and main propulsion system. [KSC SHUTTLE STATUS REPORT, 12:00 p.m., April 17, 1992; Banke, FLORIDA TODAY, p. 1A, April 17, 1992; Banke, FLORIDA TODAY, April 19, 1992.]

COLUMBIA: DRAG CHUTE INSTALLED

The drag chute and main landing gear wheel and tire assembly have been installed in the Space Shuttle Columbia in anticipation of its upcoming STS 50 mission. Work in progress: United States Microgravity Laboratory (USML) electrical mates to the Orbiter; nose landing gear installation; payload integration verification tests. The payload tunnel adapter has been scheduled for installation. [KSC SHUTTLE STATUS REPORT, 12:00 p.m., April 17, 1992.]

ATLANTIS: PROPULSION LEAK CHECKS

Auxiliary power unit (APU) lube oil flush preparations and main propulsion system leak checks on Atlantis have been completed as part of its post-flight processing following its STS 45 mission. Work in progress: power reactant storage and distribution systems test; payload bay vent filter checks; aft flight deck and mid-body deconfigurations; auxiliary power unit water valve changeout operations; main engine foam insulation removal; continue stacking solid rocket boosters in the Vehicle Assembly Building. The Orbiter's main engines will be removed next week. Meanwhile, Discovery continues to undergo extensive modifications and processing. The Orbiter has in the past week undergone freon coolant loop decay checks and the removal of the main propulsion system. [KSC

SHUTTLE STATUS REPORT, 12:00 p.m., April 17, 1992; Banke, FLORIDA TODAY, p. 5A, April 19, 1992.]

April 20: **TCDT SUCCESS: ENDEAVOUR**

Last week, the three main engines of Endeavour were replaced and the Terminal Countdown Demonstration Test (TCDT) was successfully held April 17. Work in progress: installing heat shields around the three main engines; preparations for the main engine flight readiness test; post-FRF inspections of the main propulsion system; leak checks of the liquid oxygen and hydrogen systems. Work scheduled: Flight Readiness Review April 22; helium signature leak test at week's end. [KSC SHUTTLE STATUS REPORT, 12:00 p.m., April 17, 1992.]

STS 50: COLUMBIA PREPARATIONS

In Orbiter Processing Facility Bay 3, Columbia has had its drag chute installed. Work in progress: interface verification tests of the USML payload; separating wire bundles in the Orbiter's midbody; closeouts of the midbody. Leak and functional tests of Atlantis' APUs and the Orbiter's forward reaction control system have begun. Technicians are also inspecting the vehicle's hydraulic system. The three main engines of Atlantis are scheduled to be removed this week. Discovery is undergoing structural inspections and modifications along with leak checks of the freon coolant loop. [KSC SHUTTLE STATUS REPORT, 12:00 p.m., April 17, 1992.]

April 21: **STS 49: ENDEAVOUR PAD PROCESSING**

At Launch Complex 39B, Endeavour is being prepared for its main engine flight readiness test. KSC spokeswoman **Lisa Malone** said, "It's a good test of the engines; it tells you that the engines are going to perform as commanded." Technicians are smoothing the interference fit between the heat shield "eyelids" for the No. 3 main engine; workers are also conducting post-FRF inspections of the main propulsion system and leak checks of the liquid oxygen and hydrogen systems. Endeavour's Flight Readiness Review takes place tomorrow and technicians will conduct a helium signature leak test of the main engines and main propulsion system this weekend. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 21, 1992; Halvorson, FLORIDA TODAY, p. 3A, April 21, 1992.]

STS 50: USML TESTS COMPLETED

Interface verification tests of the United States Microgravity Laboratory payload have been completed aboard Columbia in OPF Bay 3. Work in progress: closeouts of the midbody; preparations to install the spacelab tunnel adapter and modifications to allow more crew stowage for the upcoming extended mission. [SEE: EDO.] [KSC SHUTTLE STATUS REPORT, 10 a.m., April 21, 1992.]

ATLANTIS: OPF BAY 1

Tests of Atlantis' power reactant and storage distribution system (PRSD) are underway in OPF Bay 1. Other work in progress includes: preparations to remove the three main engines; servicing and sampling of the fuel cell coolant system; leak and functional tests of the auxiliary power units and the forward reaction control system; inspections of the hydraulic system. The three main engines are scheduled for removal this week. Discovery is undergoing removal of the helium tanks for its main propulsion system;

removal of the PRSD tanks; leak checks of the freon coolant loops and continuing with inspections and modifications. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 21, 1992.]

April 22: **ENDEAVOUR: HEAT SHIELDS INSTALLED**

Endeavour's main engine heat shields have been installed at Launch Complex 39B and STS 49 continues on schedule for launch in the first week of May. Work in progress: Flight Readiness Review; main propulsion system flight readiness test and leak checks; post-FRF processing operations. Work scheduled: auxiliary power unit leak checks and ordnance operations. [KSC SHUTTLE STATUS REPORT, 12:00 NOON, April 22, 1992.]

NASA MAY BUY SOYUZ CAPSULE

"Congress asked us to look at the Soviet assets," said **Richard Kohrs**, Director of the Space Station Program, at the 29th annual Space Congress (Cocoa Beach, FL). NASA is thinking about purchasing a Russian Soyuz capsule for use as an emergency crew rescue vehicle until another emergency escape vehicle is constructed. Two American vehicles are being considered. Final Space Station design review is on schedule for next year. [Brown, FLORIDA TODAY, p. 1A, April 23, 1992.]

COLUMBIA: LANDING GEAR INSTALLED

In preparation for its upcoming STS 50 mission, Columbia has had its nose landing gear installed and completed payload integration verification tests. Work in progress: midbody closeouts; installation of payload bay liners; preparations to leak check and install tunnel adapter; hydraulic system fill and bleed. Work scheduled: tunnel adapter installation. [KSC SHUTTLE STATUS REPORT, 12:00 NOON, April 22, 1992.]

ATLANTIS: STS 46 PROCESSING

Main engine foam insulation has been removed from Atlantis' engines in OPF Bay 1. Work in progress: APU leak and functional tests; forward reaction and control system leak and functional checks; water spray boiler leak and functional tests; payload bay vent filter checks; aft flight deck and midbody deconfigurations; stacking of solid rocket boosters in Vehicle Assembly Building. The Orbiter's main engines are scheduled for removal. Discovery has had its main propulsion system helium tank removed along with the vehicle's power reactant and storage distribution tank. Work in progress on Discovery: continued modifications and freon coolant loop leak and decay checks. [KSC SHUTTLE STATUS REPORT, 12:00 NOON, April 22, 1992.]

ENDEAVOUR TO GO MAY 4

NASA today concluded the Flight Readiness Review for STS 49, selecting May 4 as the launch date for the maiden flight of the Space Shuttle Endeavour. KSC spokeswoman **Lisa Malone** said, "It's one of the biggest missions we've ever flown in the history of the Space Shuttle Program. And on top of that, it's the maiden voyage of Endeavour." Shuttle mission STS 49 will be launched from Launch Complex 39B during a window that extends from 8:34 to 9:27 p.m. EDT. The 6-day, 23-hour mission will end with a landing on May 11 at Edwards Air Force Base, CA. A 7-member crew will guide Endeavour on her maiden flight; the Commander is **Daniel C. Brandenstein** and the Pilot is **Kevin P. Chilton**. Mission Specialists are **Bruce E. Melnick, Pierre Thuot, Richard J. Hieb, Kathryn**

C. Thornton and **Thomas D. Akers.** The primary mission objective for STS 49 is to rendezvous, repair and reboost an INTELSAT communications satellite stranded in a low Earth orbit after launch aboard an expendable vehicle. Another mission goal is to conduct extravehicular activities (spacewalks) to evaluate equipment and techniques for constructing Space Station Freedom. Three consecutive space walks will be performed, a first for the Shuttle Program. ["STS-49 Space Shuttle Launch Advisory," NASA/KSC News Release, April 22, 1992; Halvorson, FLORIDA TODAY, p. 4A, April 23, 1992.]

April 23: **ENDEAVOUR: ENGINES TESTED**

Technicians at Launch Complex 39B have successfully conducted the main engine flight readiness test of Endeavour's three main engines; the Flight Readiness Review was completed yesterday and managers chose May 4 as the official launch date for the Orbiter's STS 49 mission. Work in progress: tests of the four space suits tucked inside the airlock; cycling of the Orbiter's aerosurfaces; preparations for the helium signature leak test of the main engines and main propulsion system which is scheduled for tomorrow; post-FRF inspections of the main propulsion system and leak checks of the gaseous oxygen system. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 23, 1992; "Endeavour Launch Set for May 4," THE ORLANDO SENTINEL, p. A-10, April 23, 1992.]

COLUMBIA: MORE MODIFICATIONS FOR STS 50

Modifications of Columbia to prepare it for its upcoming STS 50 mission continue in OPF Bay 3. Other work in progress: tests of the Orbiter's flight control aerosurfaces; preparations for the brake anti-skid test; closeouts of the midbody; installation of the spacelab tunnel adapter. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 23, 1992.]

ATLANTIS: PRSD TEST

Atlantis continues in processing for its next mission: STS 46. Activities include: tests of the power reactant storage and distribution system (PRSD); removal of the three main engines; leak and functional tests of the auxiliary power units and the forward reaction control system and inspections of the hydraulic system. Processing activities of Discovery include: removal of the helium tanks for the main propulsion system; removal of the PRSD tanks; leak checks of the freon coolant loops; structural inspections and more Orbiter modifications. [KSC SHUTTLE STATUS REPORT, 11 a.m., April 23, 1992.]

April 24: **ENDEAVOUR: EVA SUITS INSTALLED**

The four space suits stored inside Endeavour's airlock have now been tested and the Orbiter's aerosurfaces have been cycled as Endeavour awaits its May 4 launch on its STS 49 mission. Work in progress: preparations for the helium signature leak test of the main engines and main propulsion system; post-FRF inspections of the main propulsion system; first portion of ordnance installation; preparations to pressurize the hypergolic propellant tanks for flight. On April 28, the payload bay doors will be closed for flight; aft closeouts are also scheduled. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 24, 1992.]

COLUMBIA: TUNNEL ADAPTER INSTALLED

The spacelab tunnel adapter has been installed in Columbia during processing work in Orbiter Processing Bay 3. A nose wheel steering test has also been completed. Work

in progress: tests of the Orbiter's flight control aerosurfaces; brake anti-skid test; closeouts of the midbody; tests of the spacelab tunnel adapter and modifications to allow more crew stowage for the upcoming STS 50 mission. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 24, 1992.]

[] **ATLANTIS: MAIN ENGINES REMOVED**

The three main engines of Atlantis have been removed from the Orbiter during processing in OPF Bay 1. Work in progress: tests of the power reactant storage and distribution system (PRSD); leak and functional tests of the auxiliary power units and the forward reaction control system; servicing of the water spray boilers; installation of the remote manipulator arm. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 24, 1992.]

[] **DISCOVERY: HELIUM TANKS REMOVED**

During processing in OPF Bay 2, Discovery's main propulsion system's helium tanks are being removed. Technicians are also removing the PRSD tanks, conducting leak checks of the freon coolant loops and structural inspections and making further Orbiter modifications. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 24, 1992.]

April 26: **ENDEAVOUR PASSES KEY LEAK TEST**

Endeavour passed its helium signature leak test today; that cleared the way for liftoff May 4 of the newest Orbiter on its maiden STS 49 mission. Kennedy Space Center spokeswoman **Lisa Malone** said the test revealed no problems with the Shuttle's propulsion system. Also, today, technicians began installing ordnance which will be connected in the week remaining before launch. Workers are preparing to pressurize the hypergolic propellant tanks for flight. Work scheduled: closing the payload bay doors for flight and aft closeouts. The crew of Endeavour is due to arrive at KSC on May 1. [Brown, FLORIDA TODAY, p. 2A, April 27, 1992; KSC SHUTTLE STATUS REPORT, 10 a.m., April 27, 1992.]

April 27: **ENDEAVOUR LAUNCH DELAYED**

Endeavour's maiden launch will be delayed three days to accommodate photography of the liftoff. KSC Director **Robert L. Crippen** said, "The thinking was we were within just a few days of being able to do it, so why not do it? All of our criteria has always said we like daylight better than dark." Launch is now scheduled for May 7 between 7:06 and 7:55 p.m. The sun sets on that day at 8:00 p.m. Crippen added, "Since we were on the borderline, we decided to go ahead and to the cautious thing." A Delta 2 launch originally set for May 7 has been delayed due to minor problems; these opened May 7 as a potential launch date for Endeavour. [Banke, FLORIDA TODAY, p. 1A, April 28, 1992; Date, THE ORLANDO SENTINEL, pp. A-1 & A-6, April 28, 1992; "Liftoff of New Space Shuttle Is Rescheduled," THE NEW YORK TIMES, p. B8, April 28, 1992.]

[] **SPACE LIFE SCIENCES TRAINING**

NASA has selected 48 college students, including 20 international students, to participate in its annual Space Life Sciences Training Program at the Kennedy Space Center, FL. The intensive 6-week summer residence training program is for college students interested in life sciences, pre-medicine, bioengineering or related fields. The program is designed to attract college students towards a career in space life sciences research.

Selected students work with NASA researchers in planning flight and ground support experiments. In addition to offering research experience, the curriculum utilizes lectures, tours and special projects to provide complete overview of the field of space life sciences. The program will be held from June 20, 1992, through July 31, 1992. [NASA/KSC News Release No. 92-53, April 27, 1992.]

STS 50: TUNNEL ADAPTER TESTED

Technicians in OPF Bay 3 have tested the spacelab tunnel adapter which is being prepared for installation in Columbia for use in its upcoming STS 50 flight. Workers are also closing out the midbody and making modifications to allow more crew stowage for the extended mission. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 27, 1992.]

ATLANTIS: PRSD TESTED

The power reactant storage and distribution system (PRSD) aboard Atlantis has been tested and leak and functional tests of the forward reaction control system have also been completed. Work in progress: testing of the main propulsion system; orbital maneuvering system functional tests; leak and functional tests of the auxiliary power units; servicing of the water spray boilers and installation of the remote manipulator arm. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 27, 1992.]

DISCOVERY: MODIFICATIONS CONTINUE

While modifications continue to be made on Discovery, other work is in progress: removal of the helium tanks for the main propulsion system; removal of the PRSD tanks; leak checks of the freon coolant loops and structural inspections of the Orbiter. Discovery is being modified in OPF Bay 2. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 27, 1992.]

April 28: **GOLDIN MAKES APPOINTMENTS**

NASA Administrator **Daniel S. Goldin**, who succeeded former Administrator **Richard H. Truly** on April 1, announced today the following appointments at NASA Headquarters:

Major General **Jeremiah W. Pearson III**, USMC to be Associate Administrator, Office of Space Flight
Bryan D. O'Connor, former NASA Astronaut to be Deputy Associate Administrator, Office of Space Flight
Charles F. Bolden, former NASA Astronaut to be Assistant Deputy Administrator
Frederick Gregory, former NASA Astronaut to be Associate Administrator, Office of Safety and Mission Quality
Allison McNally Executive Officer
Dee Lee Executive Assistant to the Deputy Administrator

Goldin said, "This will be the first in a number of personnel announcements during the coming months." The changes are aimed at "reducing our cost of doing business and eliminating the bureaucracy that is stifling the creative thought process," he added. Pearson replaces **William Lenoir**, a former astronaut. [NASA/KSC News Release No. 92-34, April 28, 1992; Eisler, FLORIDA TODAY, p. 1A, April 29, 1992; "NASA Chief Appoints 4 to Key Positions," THE ORLANDO SENTINEL, April 29, 1992.]

April 29: **ENDEAVOUR: CARGO BAY DOORS CLOSED**

In preparation for its STS 49 mission May 7, Endeavour's payload bay doors have been closed - at 5:50 p.m. yesterday. Work in progress: purges of the external tank; closing out of the aft compartment including final inspections of the auxiliary power units, foaming of main propulsion system lines, and closeouts of the avionics bays; preparations to begin the launch countdown next week. Work scheduled: closing out the aft compartment; final ordnance operations; launch at 7:06 p.m. with the window extending until 7:55 p.m. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 29, 1992; "Endeavour Preened at KSC," FLORIDA TODAY, p. 2A, April 29, 1992.]

[] **COLUMBIA: SPACELAB TUNNEL INSTALLED**

In Orbiter Processing Bay 3, technicians have installed the spacelab tunnel in the Space Shuttle Columbia in preparation for its upcoming STS 50 mission. Work in progress: filling and bleeding of the hydraulic system; crew stowage modification for extended flights; servicing the auxiliary power units with water; electrical redundancy checks of the orbital maneuvering system and the reaction control system; brake anti-skid test. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 29, 1992.]

ATLANTIS: TESTS IN OPF BAY 1

The Space Shuttle Atlantis is undergoing a number of tests in Orbiter Processing Facility Bay 1: orbital maneuvering system functional tests; leak and functional tests of the auxiliary power units and tests of the main propulsion system. Other work in progress includes: thermal protection system operations; configuring the aft flight deck for the STS 46 mission and troubleshooting the Ku-band antenna. In OPF Bay 2, work continues on Discovery which is undergoing structural inspections and modifications. The PRSD tanks are being removed and leak checks of the freon coolant loops are being made. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 29, 1992.]

April 30:

ORBITER-NAMING PARTICIPANTS

The two national winning student teams and many of the educators who participated in NASA's Orbiter-Naming Program will meet May 5-7. A reception is planned for May 5 at the Holiday Inn (Indialantic, FL). Participants in the program will be interviewed at the Kennedy Space Center Banana Creek launch viewing site May 7, prior to the launch of Endeavour's maiden mission, STS 49. The name of the Space Shuttle Orbiter, Endeavour, resulted from a nationwide Orbiter-naming competition supported by educational projects created by student teams in elementary and secondary schools. The two national winning teams were selected from over 6,100 entries involving more than 71,000 students.

Congressman **Tom Lewis** (R-FL), who introduced legislation in March 1986 calling for the replacement Orbiter [for Challenger] to be named from suggestions submitted by students, will be the featured speaker during the May 5 reception. In addition, the nine students of the Senatobia Middle School (Senatobia, MS) team and eight members of the Tallulah Falls School, Inc. (Tallulah Falls, GA) will present their projects. These teams were the Division I (K-Grade 6) and Division II (Grades 7-12) winners respectively in the Orbiter-naming competition. [NASA/KSC News Release No. 92-37, April 30, 1992.]

STS 49: EXTERNAL TANK PURGED

"We're chugging on," said KSC spokesman **Dick Young** about LC 39B efforts to finish preparing NASA's newest Orbiter for its maiden voyage. Endeavour's external tank has been purged in STS 49 pre-launch preparations at Launch Complex 39B. Purges of the power reactant storage and distribution system are underway as are closeouts of the aft compartment and avionics bays, final inspections and preparations to begin the launch countdown May 4. Young also said that workers will complete the application of foam insulation to fuel lines within the Orbiter's main propulsion system. The aft compartment is expected to be closed out tomorrow. Final ordnance operations begin May 1. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 30, 1992; Halvorson, FLORIDA TODAY, p. 6A, April 30, 1992.]

STS 50: TIRES CHECKED

Pressure checks of the main landing gear tires on Columbia have been completed as launch day for STS 50 nears. Work in progress: filling and bleeding the hydraulic system; crew stowage modification for extended flights; electrical redundancy checks of the orbital maneuvering system and the reaction control system; brake anti-skid test and preparations to install the waste containment system. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 30, 1992.]

ATLANTIS: WORK IN PROGRESS

Preparations for the STS 46 mission of Atlantis continue in OPF Bay 1: orbital maneuvering system functional tests; leak and functional tests of the auxiliary power units; thermal protection system operations; configuring the aft flight deck for the STS 46 mission; testing of the Ku-band antenna drive assembly; testing of the main propulsion system. Discovery remains in OPF Bay 2 where it is undergoing structural inspections and modifications. The removal of the vehicle's PRSD tanks is underway as are leak checks of the freon coolant loops. [KSC SHUTTLE STATUS REPORT, 10 a.m., April 30, 1992.]

MAY

May 1: **STS 49: PRSD SYSTEM PURGED**

At Launch Complex 39B, workers have purged Endeavour's power reactant storage and distribution system and completed final ordnance operations and checks of firing circuits. Work in progress: closing out the aft compartment including final inspections, closeouts of the avionics bays and removal of work platforms; installation of flight doors on the aft compartment; preparations to begin the launch countdown May 4. Work scheduled: STS 49 flight crew arrival; launch countdown start at 11 p.m. May 4 at the T-43 hour mark. Launch of STS 49 is set for 7:06 p.m. EDT with the window extending until 7:55 p.m. May 7. The STS 49 mission is the first for the Space Shuttle Endeavour; other firsts include: three spacewalks and a drag chute-assisted landing at Edwards Air Force Base (CA). [KSC SHUTTLE STATUS REPORT, 10 a.m., May 1, 1992; "Technicians Continue Work Toward Endeavour's Launch," FLORIDA TODAY, p. 2A, May 2, 1992; Brown, FLORIDA TODAY, p. 1A, May 4, 1992; Date, THE ORLANDO SENTINEL, pp. A-1 & A-14, May 3, 1992.]

COLUMBIA: USML LEAK CHECKS DONE

Leak checks of Columbia's United States Microgravity Laboratory payload tunnel have been completed. Work in progress: interface verification testing of the USML tunnel; crew stowage modification for extended flights; electrical redundancy checks of the orbital maneuvering system and the reaction control system. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 1, 1992.]

ATLANTIS AND DISCOVERY

In OPF Bay 1, Atlantis is undergoing tests of its orbital maneuvering system and leak and functional tests of the auxiliary power units. Thermal protection system operations are underway and the aft flight deck is being configured for the STS 46 mission. Discovery continues to be modified and inspected in OPF Bay 2. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 1, 1992.]

May 2: **TWO NIGHT LAUNCHES NEXT WEEK**

"You could say it's going to be the culmination of all the hard work the team has put in over the past year," said KSC spokeswoman **Lisa Malone**, speaking of the May 7 launch of Endeavour on its maiden voyage, STS 49. That launch is scheduled to occur at 7:06 p.m.EDT. A Delta 2 launch on May 9 will be the second night launch of the week; the windows are from 7:43 to 8:00 p.m. and from 8:31 to 9:49 p.m. Between these two launches the six surviving Mercury astronauts will revisit Brevard for the 30th anniversary of the first three manned orbital flights. Mrs. **Betty Grissom**, widow of the late **Virgil "Gus" Grissom**, will be joined in ceremonies at the U. S. Astronaut Hall of Fame by **John Glenn, Scott Carpenter, Walter Schirra, Gordon Cooper, Deke Slayton** and **Alan Shepard**. [Halvorson, FLORIDA TODAY, p. 1A, May 3, 1992.]

May 4: **LAUNCH MINUS THREE DAYS: STS 49**

There is a 60 percent chance of acceptable weather conditions on May 7 at launch time for Endeavour's maiden voyage, STS 49. The concern is for thick low level clouds in the area. The aft compartment of the Orbiter was closed May 1; afterward the solid rocket

boosters and the external tank were closed. Work in progress: preparations to begin the launch countdown at 11 p.m. tonight at the T minus 43 hour mark; removing platforms from the middeck; removing covers from the reaction control system thrusters; washing down the mobile launcher platform and the flame trench. Work scheduled: arrival of the STS 49 flight crew at 7:00 p.m. tonight; move the rotating service structure away from the vehicle starting at 6:00 p.m. May 6; loading the external tank with its flight load of propellants beginning at 10:16 a.m. May 7; launch is scheduled at 7:06 p.m. May 7 and the window extends to 7:55 p.m. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 4, 1992; Diller, NASA/KSC, "L-3 Day Weather Forecast for STS-49...," May 4, 1992.]

CHUTE LEAK CHECK: COLUMBIA

Workers in OPF Bay 3 have completed a structural leak check of Columbia's drag chute. Preparations for the Orbiter's STS 50 mission continue: leak checks of the elevon cove seals; interface verification testing of the USML tunnel; crew stowage modification for extended flights; testing of the communications and radar systems. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 4, 1992.]

ATLANTIS AND DISCOVERY: PROCESSING

Technicians in OPF Bay 1 have installed Atlantis' new beefed-up main landing gear wheels and serviced the auxiliary power units with lube oil. Work in progress: orbital maneuvering system functional tests; thermal protection system operations; configuring the aft flight deck for the STS 46 mission; preparation of the hydraulic system for testing. Inspections and modifications of Discovery continue unabated in OPF Bay 2. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 4, 1992.]

ENDEAVOUR CREW ARRIVES AT KSC

Endeavour's seven-member crew arrived at KSC shortly after 7:00 p.m. ready and eager to begin the STS 49 mission. "We've been training real hard for the last year or so, and we aren't going to get any smarter, so now's a good time to go fly," said Mission Specialist **Kathryn C. Thornton** on her arrival. Fellow Mission Specialist **Thomas D. Akers** said, "I really feel lucky to be assigned to a flight like this. I can't wait to get back and tell you all about it." Other crew members include Commander **Daniel C. Brandenstein**, Pilot **Kevin P. Chilton** and Mission Specialists **Bruce E. Melnick, Richard J. Hieb** and **Pierre Thuot**. [Halvorson, FLORIDA TODAY, p. 1A, May 5, 1992; "Endeavour Crew Prepares for Launch," USA TODAY, p. 4A, May 5, 1992; Date, THE ORLANDO SENTINEL, May 5, 1992.]

May 5:

STS 49: COUNTDOWN BEGINS

The launch countdown for the STS 49 mission of Endeavour began on time at 11 p.m. yesterday. There is a 30 percent chance of acceptable weather conditions on May 7 at launch time; the concern is for showers or thunderstorms and thick low level clouds in the area. Conditions improve on May 8 to a 40 percent chance of having acceptable weather. The flight crew is scheduled for a brief medical exam, a review of flight data files, perform fit checks with crew equipment and will be briefed by the vehicle integrated test team. Work in progress: countdown; preparations to load the fuel cell storage tanks with cryogenic reactants; final set ups of the hazardous gas detection system; activation of the navigation aids; preparing the main engines for flight. Work scheduled: loading the fuel cell storage tanks with reactants tonight; rotate the rotating service structure away

from the vehicle at 6 p.m. May 6; loading the external tank with its flight load of propellants starting at 10:16 a.m. May 7. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 5, 1992; Halvorson, FLORIDA TODAY, May 6, 1992.]

STS 50: PROCESSING CONTINUES

The Space Shuttle Columbia, in OPF Bay 3, continues to undergo processing activities for its upcoming STS 50 mission: servicing the ammonia boiler; installation of the Orbiter's waste containment system; testing of the communications system; functional checkout of the orbital maneuvering system crossfeed lines; leak checks of the elevon cove seals; crew stowage modification for extended flights. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 5, 1992.]

ATLANTIS: MORE TESTS

Atlantis is undergoing several tests this week in OPF Bay 1: orbital maneuvering system functional tests; testing of the hydraulic system and of the nose wheel steering system; and thermal protection system operations. The aft flight deck is being configured for the STS 46 mission. The Orbiter's three main engines will be installed this week. Discovery is being modified in OPF Bay 2 and is undergoing structural inspections, thermal protection system operations and freon coolant loop troubleshooting. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 5, 1992.]

THOMAS O. PAINE, FORMER ADMINISTRATOR

Upon learning of the death of Dr. **Thomas O. Paine**, the third Administrator of NASA, NASA Administrator **Daniel S. Goldin** issued the following statement: "The Agency mourns the death of Tom Paine, an outstanding American. Over the years, I had the privilege of working with tom personally. I found him to be a man of vision and integrity. Tom's leadership of NASA through the first several moon landings was nothing short of exemplary and later as Chairman of the National Commission on Space in the mid-1980s, his direction of this Presidentially appointed group formulated a bold agenda to carry America's civilian space enterprise into the 21st century. Within the past six months, the nation has been saddened by the passing of three former NASA Administrators - **James C. Fletcher** in December, **James E. Webb** in February and now Tom Paine. Their accomplishments and legacies will long endure." Paine died of cancer [on May 4] at his home (Brentwood, CA); he was 70. [NASA/KSC News Release No. 92-41, May 5, 1992; "Ex-NASA Chief Dies of Cancer," FLORIDA TODAY, p. 7A, May 6, 1992; Steinberg, THE NEW YORK TIMES, May 7, 1992; "Thomas O. Paine, 70, NASA Administrator," THE WASHINGTON TIMES, May 7, 1992; "Thomas O. Paine, Led NASA During Era of Moon Landings," CHICAGO TURBINE, May 6, 1992; "Thomas Paine Dies; Led NASA Through Early Apollo Missions," THE WASHINGTON POST, May 8, 1992.]

May 6:

PELLERIN TO FILL SAFETY POST

NASA Administrator **Daniel S. Goldin** today announced the appointment of Dr. **Charles J. Pellerin, Jr.** to the position of Deputy Associate Administrator for Safety and Mission Quality. In addition, he will serve as Special Assistant to the Administrator for long-range planning. In this capacity, he will work with Assistant Deputy Administrator **Charles F. Bolden**. Pellerin has served since 1983 as Director of Astrophysics in NASA's Office of Space Science and Applications. Many of the most complex satellites ever conceived were completed under his leadership and launched in recent years. The scientific results

from these missions, which include the Cosmic Background Explorer (COBE), Hubble Space Telescope and Compton Gamma Ray Observer, are now changing how we view the universe and humanity's place in it. Pellerin began his NASA career as an aerospace engineer at the Goddard Space Flight Center (Greenbelt, MD), where he was involved in the engineering of rocket instrumentation and later in the use of sounding rockets for scientific research. In 1975, he moved to NASA Headquarters and for 5 years managed the development and integration of scientific instrumentation for flight on the Space Shuttle. In 1974, Pellerin was awarded a Ph.D. in physics from the Catholic University of America. He has received many honors, including the Presidential Rank Award, Catholic University Science Alumni Award and NASA's Outstanding Leadership Medal. [NASA/KSC News Release No. 92-59, May 6, 1992; "Goldin Appoints Safety Associate," FLORIDA TODAY, May 17, 1992.]

ENDEAVOUR: L-2 DAY REVIEW COMPLETED

Shuttle Program Director **Leonard S. Nicholson**, speaking at a KSC news conference, said, "I consider the first launch of Endeavour to be the end of [the Challenger] era and the starting of another" in which the role of astronauts working in space takes a new emphasis. At Launch Complex 39B, technicians and managers of the STS 49 mission have completed their L-2 day review of the pre-launch operations. Cryogenic fuel cell loading operations are also finished. Work in progress: the launch countdown continues on time and without incident; the clock will hold today at 3:00 p.m. for a scheduled 13-hour, 16-minute built-in hold; rotating service structure move preparations. Work scheduled: rotation of the service structure from the vehicle is scheduled for tonight; loading of the external tank with cryogenic fuels is scheduled to begin at 10:16 a.m. May 7 with launch targeted for 7:06 p.m. EDT with a window extending until 7:55 p.m. Weather continued to be a concern with the probability of criteria violation ranging from 60 to 70 percent until launch time. [Broad, THE NEW YORK TIMES, p. A13, May 7, 1992; KSC SHUTTLE STATUS REPORT, 12 Noon, May 6, 1992; "Launch Day Weather Forecast for STS 49," NASA/KSC News Release, May 7, 1992; Halvorson, FLORIDA TODAY, p. 1A, May 6, 1992.]

COLUMBIA: OMS CROSSFEED LINES TESTED

Tests of Columbia's orbital maneuvering system crossfeed lines have been completed. Technicians in OPF Bay 3, where the vehicle is being processed, are servicing Columbia's ammonia boiler, installing and checking the Waste Collection System and preparing the crew equipment interface test. [KSC SHUTTLE STATUS REPORT, 12 Noon, May 6, 1992.]

ATLANTIS: BRAKES TESTED

In OPF Bay 1, Atlantis has had its brake and anti-skid tests completed along with nose wheel steering operations and hydraulic fill and bleed functional tests. Work in progress: preparations for main engine removal beginning tonight and stacking of solid rocket boosters for STS 46 in the Vehicle Assembly Building. Technicians in OPF Bay 2, have completed installing the power reactant and storage distribution tank in Discovery. Work in progress on Discovery: modifications; freon coolant loop leak and decay checks and window installations. [KSC SHUTTLE STATUS REPORT, 12 Noon, May 6, 1992.]

May 7: **STS 49 LAUNCH SUCCESS!**

"It was fantastic. When I saw the flames shoot out of the bottom of the Endeavour, I said a new fresh page is starting," said new NASA Administrator **Daniel S. Goldin** who as in attendance as Endeavour lifted off from Launch Complex 39B at 7:40:.07 p.m. EDT tonight. It made a trouble-free climb to orbit to begin Shuttle mission STS 49. Shuttle Program Director **Leonard S. Nicholson** said, "I consider the first launch of Endeavour to be the end of that [the Challenger accident] era and the starting of another." A normal engine firing to circularize Endeavour's orbit ensued, putting the spacecraft into the planned 182 by 140 nautical mile orbit. Launch was delayed by 34 minutes because of weather conditions at the Kennedy and the Transoceanic Abort sites and for the resolution of one of the master events controllers (MEC). The MEC relays commands from the Orbiter's computers to fire explosive charges to the SRB holddown bolts at launch and to separate the boosters and tank in flight. Minimal damage was reported at launch pad 39B. Mobile launcher platform 2 will be transferred to the Vehicle Assembly Building tomorrow evening.

The solid rocket boosters are being recovered by the two retrieval ships, the Liberty Star and the Freedom Star. Both frustrums and parachutes are onboard the ships. The boosters will be towed back to Hangar AF at Cape Canaveral Air Force Station. High sea state conditions are slowing the retrieval operation somewhat. Impact coordinates for the left booster were 28 degrees, 41.9 minutes north and 78 degrees, 03.32 minutes west. Coordinates for the right booster were 28 degrees, 41.6 minutes north and 78 degrees, 03.7 minutes west. They landed about 140 miles due east of KSC and about 6 and a half miles from the retrieval ships. Noting that three spacewalks are scheduled for this STS 49 mission, National Space Society Program Director **David Brandt** said, "They need to start practicing spacewalks in a big way, and NASA knows that. Certainly they are going to have to do a lot of spacewalking when they get to the Hubble repair mission next year, and they'll have to do even more of it when they begin building the Space Station." Former U. S. Representative **Bill Nelson**, who flew on STS 61C, said, "This is a precursor to us doing much bigger and much more exciting things in space. But we need this kind of experience and history behind us in order to keep doing more and more in space." [Banke, FLORIDA TODAY, p. 1A, May 7, 1992; Broad, THE NEW YORK TIMES, May 7, 1992; Broad, THE NEW YORK TIMES, P. A13, May 8, 1992; MISSION CONTROL CENTER STATUS REPORT #1, May 8, 1992; Sawyer, THE WASHINGTON POST, May 7, 1992; Date, THE ORLANDO SENTINEL, pp. A-1 & A-11, May 7, 1992; KSC SHUTTLE STATUS REPORT, May 8, 1992; Halvorson, FLORIDA TODAY, pp. 1A-2A, May 8, 1992; Date, THE ORLANDO SENTINEL, May 8, 1992; "Endeavour Soars After Weather Delay," USA TODAY, May 8, 1992; Stewart, LOS ANGELES TIMES, May 8, 1992; Sawyer, THE WASHINGTON POST, May 8, 1992; "Shuttle Sets Off to Repair Satellite," THE WASHINGTON TIMES, May 8, 1992; "Shuttle Endeavour Blasts Off On Maiden Flight," PHILADELPHIA INQUIRER, May 8, 1992.]

May 8: **ASTRONAUT HONORS TODAY**

Two more names will be added at 10:30 a.m. today to the Astronauts Memorial in a ceremony at Spaceport USA: **Manley "Sonny" Carter**, who died in a 1991 plane crash and Air Force Captain **Mike Adams** who died in an X-15 rocket plane crash in 1967. Adams had qualified for astronaut wings for flying above 50 miles, the beginning of space. At the U.S. Astronaut Hall of Fame and Space Camp Florida (Titusville, FL) the six surviving Mercury astronauts will mark the 30th anniversary of the orbital flights of **John Glenn**,

Scott Carpenter and **Walter Schirra**. [Banke, FLORIDA TODAY, p. 1B, May 8, 1992; Date, THE ORLANDO SENTINEL, May 7, 1992.]

COLUMBIA: WCS INSTALLED

Columbia's waste containment system (WCS) has been installed in the Orbiter in OPF Bay 3. Work in progress: testing of the communications system; leak checks of the elevon cove seals; crew stowage modification for extended flights; preparations for the Crew Equipment Interface Test of the USML-1 laboratory. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 8, 1992.]

ATLANTIS: TWO MAIN ENGINES INSTALLED

Main engines No. 1 and 3 have been installed in Atlantis during its processing stay in OPF Bay 1. The waste containment system (WCS) was also installed. Work in progress: installation of the no. 2 engine; installation of getaway special canisters in the payload bay; thermal protection system operations; configuring the aft flight deck for the STS 46 mission. Discovery's modification continues to proceed in OPF Bay 1. Work in progress: structural inspections; thermal protection system operations; X-rays of the freon coolant loop. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 8, 1992.]

CRANE FAILURE DELAYS DELTA LAUNCH

The Delta 2 launch, already delayed from last Thursday (April 30), will now occur no earlier than May 13. A crane that lifts the rocket's nose cone has failed and must be repaired. "If those repairs go as planned, we should be able to make it," said **Anne McCauley**, spokeswoman for McDonnell Douglas. ["Crane Failure Delays Delta Liftoff," FLORIDA TODAY, p. 2A, May 9, 1992.]

May 9:

SNOOPY AWARD WINNERS

Kathy Newland and **William "Tom" LaChance**, both employees of EG&G FLORIDA, Inc., were awarded Silver Snoopys by astronaut **David A. Wolf** today. Newland operates the KSC automated locator system. LaChance is an engineering support specialist; he received the award for the support he provided EG&G's generator shop for Space Shuttle launches and the NASA Public Affairs office. ["2 KSC Workers Earn Silver Snoopy Awards," FLORIDA TODAY, p. 9E, May 10, 1992.]

KSC MANAGERS GET NEW JOBS

Robert B. Sieck and **Ted Sasseen** are getting new jobs today. Sieck has been named Deputy Director of Space Shuttle Management and Operations and will assist **Jay Honeycutt** in the management and technical direction of the Shuttle Program at Kennedy Space Center. Sieck will continue as Space Shuttle Launch Director. Sasseen was named a special assistant to new KSC Director **Robert L. Crippen**; he will work on special engineering issues for the Director. Sasseen has been Shuttle engineering director at KSC since 1987. ["Senior KSC Managers Take On New Roles," FLORIDA TODAY, p. 9E, May 10, 1992.]

LOW TROPHY FINALISTS

McDonnell Douglas Space Systems Co.'s KSC division has been named a finalist in this year's George M. Low Trophy competition. New NASA Administrator Daniel S. Goldin said, "I'm a true believer in the George M. Low Trophy process and the TQM philosophy. The award recognizes superior performance by contractors and facilitates the transfer of successful strategies throughout the country. These strategies ensure that quality products and services accommodate our various customers to the highest degree." The trophy will be awarded at the Ninth Annual NASA/Contractor Conference in Pasadena, CA, on October 20.

George M. Low Trophy Finalists - 1992

[1]	McDonnell Douglas Space Systems Co. at Kennedy Space Center
[2]	Cray Research Inc.'s Customer Service, Engineering and Manufacturing Divisions in Chippewa Falls, WI
[3]	Honeywell Inc.'s Space and Strategic Systems Operation in Clearwater, FL
[4]	IBM Federal Sector Division in Houston, TX
[5]	Paramax System Corp.'s Space Systems Operation in Houston, TX
[6]	Rocket Research Co. of Redmond, WA
[7]	Stanford Telecommunications Inc. of Reston, VA
[8]	Technical Analysis Inc. of Houston, Tx

[Halvorson, FLORIDA TODAY, p. 9E, May 10, 1992.]

NEW FORECASTING TOOLS FOR NASA/AIR FORCE

A six-member team known as the Applied Meteorology Unit has undertaken a three-year effort to originate and improve forecasting tools for Kennedy Space Center and the Cape Canaveral Air Force Station. The unit is operated by NASA contract with ENSCO Inc. (VA) at the 45th Weather Squadron's facilities at the Range Operations Control Center at Cape Canaveral.

APPLIED METEOROLOGY UNIT GOALS

[[1]	Improve the accuracy of the forecast for Shuttle landings at KSC.
[2]	Develop limits for cloud cover and fog during KSC landings.
[3]	Determine how a new Doppler Weather Radar Station (Melbourne, FL) can assist in forecasting prior to launch and vehicle processing operations.
[4]	Evaluate KSC's new lightning detection system.

[Banke, FLORIDA TODAY, p. 9E, May 10, 1992.]

DELTA LAUNCH READY

The launch of an Indonesian communications satellite aboard a Delta 2 rocket is set for no earlier than May 13 during a window extending from 7:40 to 7:48 p.m. and from 8:29 to 9:47 p.m. The second will be launched no earlier than June 4. **Lyle Holloway**, Director of Launch Sites for McDonnell Douglas Space Systems Co., said that meeting the target dates was critical. "We're competing in an international marketplace every day," he said. "And it comes down to more than just dollars and cents. It comes down to being able to select a launch date and being credible that we'll make that launch date." [Halvorson, FLORIDA TODAY, May 10, 1992.]

May 11:

COLUMBIA: STS 50 PROCESSING

The Crew Equipment Interface Test of Columbia's Spacelab payload has been completed. Work in progress: testing of the new regenerative carbon dioxide removal system; functional tests of the waste containment system; testing of the communications system; leak checks of the elevon cove seals; crew stowage modification for extended flights. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 11, 1992.]

ATLANTIS: MAIN ENGINES INSTALLED

All three main engines have been installed in Atlantis during processing activities in OPF Bay 1. Other work in progress: electrically connecting the no. 2 main engine; installation of getaway special canisters in the payload bay; thermal protection system operations; configuring the aft flight deck for the STS 46 mission. Orbiter modifications of Discovery are continuing in OPF Bay 2 along with structural inspections; thermal protection system operations and preparations to service freon coolant loop no. 2. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 11, 1992.]

ENDEAVOUR'S BOOSTERS ARRIVE

The solid rocket booster retrieval ships arrived at Hangar AF at 12:30 p.m. Saturday (May 9) and both boosters were in their stands by 4 p.m. The boosters are being prepared for disassembly. Landing of Endeavour is targeted for Edwards Air Force Base (CA) at 7:38 p.m. EDT on Thursday (May 14). [KSC SHUTTLE STATUS REPORT, 10 a.m., May 11, 1992.]

GOLDIN: NASA MUST BE EFFICIENT

New NASA Administrator **Daniel S. Goldin** said today that NASA must become more efficient and make choices about which programs to pursue. "NASA," he said, "has a very broad range of things on its plate, and many of the programs that we have don't have a very clearly stated tie to the other programs. And when one has a situation like that, sometimes you can find that maybe we don't have to do everything. If we can get more focused, we'll be much more efficient in our expenditures." Goldin said that NASA managers are currently studying several approaches to running smaller, less expensive programs. "Everything can't be a multibillion-dollar, 10- to 20-year program," Goldin continued. "We have got to start some programs that are an order of magnitude less in cost and have results in three or four years. If I can accomplish one major objective in my tenure as Administrator, it's to get this close coupling (of programs) because I think it will allow us to be much more efficient with the taxpayers' dollars and get results much sooner." Goldin succeeded former Administrator **Richard H. Truly** on April 1 of this year.

[Halvorson, FLORIDA TODAY, p. 2A, May 12, 1992; Halvorson, USA TODAY, p. 3A, May 12, 1992.]

May 12: **ENDEAVOUR'S BOOSTERS EXAMINED**

A preliminary open assessment of the solid rocket boosters indicates they are in good shape following the Endeavour launch. The boosters are being prepared for disassembly at Hangar AF. Today, technicians will conduct hydrolasing operations to remove the exterior foam and cork. Flight planners are laying the groundwork to extend the STS 49 mission by one day for a landing at Edwards Air Force Base (CA) on Friday (May 15). [KSC SHUTTLE STATUS REPORT, 10 a.m., May 12, 1992.]

COLUMBIA PROCESSING: STS 50

Columbia is being processed for its upcoming STS 50 mission in OPF Bay 3. Work in progress includes; testing of the new regenerative carbon dioxide removal system; functional tests of the waste containment system; testing of the communications system; leak checks of the elevon cove seals; crew stowage modification for extended flights. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 12, 1992.]

ATLANTIS: GAS CANISTERS INSTALLED

In OPF Bay 1, Get Away Special (GAS) canisters have been installed in Atlantis. Work in progress: electrically connecting the no. 2 main engine; installation of the sleep stations; servicing of the potable water; preparations to test the remote manipulator system. Discovery is being processed in OPF Bay 2. Current activities include: installation of an oxygen tank for the fuel cells; Orbiter modifications; structural inspections; thermal protection system operations; vacuum drying freon coolant loop no. 2. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 12, 1992.]

May 13: **ENDEAVOUR BOOSTERS' DISASSEMBLY**

Endeavour's boosters are being prepared for disassembly at Hangar AF. Hydrolasing activities are continuing to remove the exterior foam and cork. Mission STS 49 is now scheduled to end with a Friday (May 15) landing at Edwards Air Force Base (CA) at 6:37 p.m. EDT. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 13, 1992; KSC SHUTTLE STATUS REPORT, 10 a.m., May 14, 1992.]

COLUMBIA/USML-1 PROCESSING

Processing work currently underway in OPF Bay 3 includes: installation of the four-tier sleep stations; testing of the new regenerative carbon dioxide removal system; crew stowage modification for extended flights; functional tests of the waste containment system; testing of the communications system; leak checks of the elevon cove seals. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 13, 1992.]

ATLANTIS/DISCOVERY PROCESSING ACTIVITIES

Work in progress on Atlantis (OPF Bay 1): preparations for main engine drying operations; servicing of the potable water; preparations to test the remote manipulator system; testing of connections for the STS 46 payloads. Discovery processing work: installation of an oxygen tank for the fuel cells; Orbiter modifications; structural

inspections; thermal protection system operations; leak checks of the freon coolant loops. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 13, 1992.]

▯ **DELTA 2 LAUNCHED**

"I knelt on my knees and thanked God," said Soejud Binwahju, of the Council of Representatives of Indonesia, on witnessing the Delta 2 launch of an Indonesian communications satellite tonight at 8:40 p.m. The payload was a 2,770-pound Palapa B4 spacecraft and is the fourth and last part of Indonesia's satellite network. Thunderclouds in the area threatened to lessen the possibility of launch, but the situation improved in time for the launch during the second available window. [Brown, FLORIDA TODAY, p. 2A, May 13, 1992; Banke, FLORIDA TODAY, p. 8A, May 14, 1992; "Delta Launch Scheduled for Tonight," THE ORLANDO SENTINEL, May 13, 1992.]

May 14: **COLUMBIA: TESTS FOR STS 50**

In OPF Bay 3, technicians are preparing Columbia for its upcoming STS 50 mission. These activities include: installation of the four-tier sleep stations; testing of the new regenerative carbon dioxide removal system; crew stowage modification for extended flights; testing of the Ku-band antenna; testing of the communications system; leak checks of the elevon cove seals. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 14, 1992.]

▯ **ATLANTIS: MAIN ENGINES DRIED**

Workers in OPF Bay 1 have finished drying the main engines of Atlantis and tests of the remote manipulator system. Work in progress: installing heat shields around the main engines; sampling the potable water; testing of connections for the STS 46 payloads. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 14, 1992.]

▯ **DISCOVERY: MODIFICATIONS IN OPF BAY 2**

An oxygen tank for the Orbiter's fuel cells has been installed in Discovery which continues to undergo modifications in OPF Bay 2. Technicians are also making structural inspections, conducting thermal protection system operations and leak checks of the freon coolant loops. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 14, 1992.]

May 15: **STS 50: PROCESSING PROGRESS**

In OPF Bay 3, Columbia is being prepared for its upcoming STS 50 mission. Activities include: installation of the four-tier sleep stations; testing of the new regenerative carbon dioxide removal system; crew stowage modification for extended flights; testing of the Ku-band antenna; testing of the communications system; leak checks of the elevon cove seals. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 15, 1992.]

▯ **ATLANTIS AND DISCOVERY: PROCESSING ACTIVITIES**

Atlantis is being processed in OPF Bay 1 and current activities include: installing heat shields around the main engines; testing of connections for the STS 46 payloads; servicing the ammonia boiler. Discovery is undergoing modifications and STS 53 processing activities in OPF Bay 2: preparations to power up the Orbiter next week; installation of electronic boxes; installation of the body flap; structural inspections; thermal

protection system operations purging the freon coolant loops. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 15, 1992.]

ENDEAVOUR TO LAND MAY 16

Endeavour's maiden voyage (STS 49) is now scheduled to end with a landing at Edwards Air Force Base (CA) at 4:57 p.m. EDT tomorrow. The Orbiter's two solid rocket boosters are being prepared for disassembly at Hangar AF. Hydrolasing activities have been completed on both boosters. Both aft skirts and the left nozzle have been removed; the right nozzle is scheduled to be removed today. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 15, 1992.]

KSC: CONTINGENCY CONTROL CENTER

NASA is considering Kennedy Space Center as a possible site for its planned Emergency Mission Control Center to be activated in the event that Johnson Space Center's Mission Control facilities were shut down due to a hurricane or terrorist activities. Three flight controllers and NASA Flight Director **Linda Ham** will check out KSC's equipment and practice sending commands to a simulated Orbiter May 19. Shuttle Test Director **Al Sofge** said that Kennedy Space Center can "give JSC all the visibility into the Orbiter's systems that they need with our current computer programs. The only thing we don't routinely do is to send commands to the Orbiter while it's in the air." He said that part of the reason for moving the center to KSC is that it is unlikely that two hurricanes of such force that would require evacuation of both centers would occur simultaneously. [Banke, FLORIDA TODAY, p. 6A, May 16, 1992.]

May 17:

RETURN TO FLORIDA

Endeavour is being readied in California for its ferry flight to Florida which may begin as soon as May 21. **John "Tip" Talone**, Endeavour's Processing Director, said of the Orbiter: "It looked pristine, as we think the jewel of the fleet should." Managers are planning to make the return flight in one day if possible. [Brown, FLORIDA TODAY, May 18, 1992.]

May 18:

INTERNATIONAL STEEL CONTRACT

International Steel Industries, Inc. (Orlando, FL) has been awarded a $333,800 contract to construct a concrete-and-metal storage facility for still and motion picture film that is used to document Space Shuttle payload processing, as well as other Shuttle prelaunch and launch activities, at Kennedy Space Center. [NASA/KSC News Release No. 54-92, May 18, 1992.]

STS 50: CARGO BAYS CLOSED FOR FLIGHT

The payload bay doors of the Space Shuttle Columbia have been closed in OPF Bay 3 for its upcoming STS 50 mission. Sleep stations have been installed and the Crew Equipment Interface Test with the STS 50 crew has been completed. Work in progress: testing of the new regenerative carbon dioxide removal system; crew stowage modification for extended flights; preparations for tests of the flight control system; structural leak tests of the aft compartment. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 18, 1992; Brown, FLORIDA TODAY, p. 6A, May 19, 1992.]

STS 46: AMMONIA BOILER SERVICED

The ammonia boilers of Atlantis have been serviced in OPF Bay 1. Other STS 46 processing activities include: installing the IMAX camera; testing the Ku-band antenna; functional testing of the external tank doors; installation of heat shields around the main engines and testing of connections for the STS 46 payloads. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 18, 1992.]

DISCOVERY: BODY FLAP INSTALLED

Discovery's body flap has been installed during processing activities in OPF Bay 2. Other work in progress includes: preparations to power up the Orbiter this week; installation of electronic boxes; Orbiter modifications; structural inspections; thermal protection system operations; vacuum drying of the freon coolant loops. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 18, 1992.]

STS 49: LANDING, MISSION SUCCESS

Mission STS 49 ended with a landing of Endeavour on May 16 at Edwards Air Force Base (CA) at 4:57 p.m. EDT. The total mission elapsed time was 8 days, 21 hours, 17 minutes and 38 seconds. Main gear touchdown came at 4:57.38 p.m.; nose gear touchdown was at 4:57.50 p.m.; the drag chute was deployed at 4:57.51 p.m. and the wheels stopped at 4:58.36 p.m. EDT. The total distance Endeavour traveled on its maiden voyage was 3,696,019 statute miles (based on an average altitude of 186 nautical miles). Shuttle Launch Director **Robert B. Sieck** said, "The vehicle looks as great as the mission it just flew. It's hard to believe it just spent nine days in space." Three finger-sized "gashes" were the only signs of damage to the Orbiter, according to Sieck. Endeavour was towed to the Mate Demate Device later in the day where KSC recovery crews began to prepare the Shuttle for its ferry flight back to Florida. Today, residual cryogenics will be offloaded from the Orbiter's fuel cell storage tanks. Overall preliminary inspections indicate the vehicle is in good condition. Endeavour could be ready for departure from California by May 21; if weather is favorable a one-day ferry flight is possible. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 18, 1992; Halvorson, FLORIDA TODAY, p. 1A-2A, May 17, 1992; Date, THE ORLANDO SENTINEL, pp. A-1 & A-18, May 17, 1992.]

ENDEAVOUR FERRY FLIGHT

At Edwards Air Force Base (CA), Kennedy Space Center workers are preparing Endeavour for its ferry flight home. **John "Tip" Talone**, Orbiter Processing Director, said the vehicle returned from its nine-day mission in excellent shape. "It look pristine, as we think the jewel of the fleet should." The ferrying operation is set to begin May 21 and managers plan to make the flight in one day if weather is favorable. A refueling stop is planned for Kelly Air Force Base (San Antonio, TX). KSC's processing facilities are presently occupied by the other three Orbiters: Columbia, Atlantis and Discovery. Columbia is not scheduled to rollover from the OPF to the Vehicle Assembly Building until next week. [Brown, FLORIDA TODAY, p. 1A, May 18, 1992; KSC SHUTTLE STATUS REPORT, 10 a.m., May 20, 1992.]

May 19:

INTELSAT K LAUNCH SCHEDULED

Meteorologists predict favorable weather May 20 for the launch of INTELSAT K, the second in a series of telecommunications satellites. "We need something to meet the

growing demand in the Atlantic region until our (next) series of satellites becomes available - particularly with the Summer Olympic games [scheduled for Barcelona, Spain]," said **Sigrid Badenelli**, spokeswoman with the International Telecommunications Satellite Organization. The launch is set to occur between 7:12 and 8:08 p.m. from Cape Canaveral Air Force Station. [Brown, FLORIDA TODAY, p. 6A, May 20, 1992.]

May 20: **COLUMBIA: STS 50 ROLLOVER MAY 27**

The transfer of the Space Shuttle Columbia from OPF Bay 3 to the Vehicle Assembly Building is scheduled for May 28 because preparations are taking more time than anticipated. Processing of the Orbiter for its upcoming STS 50 mission includes: testing of the new regenerative carbon dioxide removal system; crew stowage modification for extended flights; tests of the Orbiter's hydraulic systems; nose wheel steering test; installation of auxiliary power unit no. 2. The earliest likely launch of STS 50 will be June 24. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 20, 1992; Banke, FLORIDA TODAY, p. 8A, May 20, 1992.]

STS 46: INTERFACE VERIFICATION TEST

In Orbiter Processing Facility Bay 1, technicians have completed an interface verification test of Atlantis' IMAX camera. Orbiter processing currently involves the following activities: functional test of the landing gear; testing of the Ku-band antenna; functional testing of the external tank doors; testing of connections for the STS 46 payloads; preparations to close the payload bay doors; closeouts of the midbody and aft compartment. Meanwhile, in OPF Bay 2, workers continue processing and modifying Discovery: powering up operations; installation of electronic boxes; vacuum drying of the freon coolant loops. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 20, 1992.]

ATLAS 2A LAUNCH TONIGHT

Cape Canaveral Air Force Station was to have been the site of an Atlas 2A launch tonight, but a technical problem scrubbed the mission; it has not been rescheduled. General Dynamics Launch Commentator **Jim Codd** said the problem appeared to be in plumbing which carries supercold liquid helium through the Centaur to chill the liquid oxygen propellant. There was a related communications problem as well. The Atlas 2 was to have launched an Intelsat K satellite, a companion to the satellite reboosted on Endeavour's recently completed mission. [Banke, FLORIDA TODAY, p. 1A, May 21, 1992.]

May 21: **ENDEAVOUR'S RETURN**

Endeavour was bolted the 747 Shuttle Carrier Aircraft early this morning and is ready to begin the cross-country ferry flight back to Florida. Weather conditions are unacceptable between California and Texas for the ferry flight today. Officials will reassess weather conditions tomorrow morning. If weather is acceptable, Endeavour could depart Edwards at 9 a.m. EDT and make a refueling stop along the way. A one-day ferry flight is possible, however the forecast indicates will be a 50 percent chance of having acceptable conditions tomorrow. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 21, 1992; "Endeavour May Head Home Today," FLORIDA TODAY, p. 8A, May 21, 1992.]

COLUMBIA: NOSE WHEEL TEST COMPLETED

A nose wheel steering test on Columbia has just been completed in OPF Bay 3 in preparation for its June STS 50 mission; the flight control system has also been tested. Work in progress: testing of the new regenerative carbon dioxide removal system; crew stowage modification for extended flights; tests of the Orbiter's hydraulic systems; nose wheel steering test; hooking up the auxiliary power units. Work scheduled: closeouts of the Orbiter's forward and aft compartments; weight and center of gravity determinations May 20 and transfer to the VAB on May 28. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 21, 1992.]

ATLANTIS/DISCOVERY PROCESSING

In OPF Bay 1, Atlantis is currently undergoing processing operations: tests of the flight control system; tests of the camera on the robot arm elbow; functional test of the landing gear; testing of the Ku-band antenna; functional test of the external tank doors; testing of the connections for the STS 46 payloads; preparations to close the payload bay doors; closeouts of the midbody and aft compartment. Discovery, in OPF Bay 2, reached a milestone in its modification when it was powered up yesterday. Preparations were made to stow the radiators aboard the Orbiter and leak checks of the freon coolant loops were conducted. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 21, 1992.]

May 21:

WEATHER DELAYS ENDEAVOUR RETURN

Stormy weather between Edwards Air Force Base (CA) and Kelly Air Force Base (San Antonio, TX) - Endeavour's refueling stop - delayed the start of the Orbiter's ferry flight to Florida. KSC spokeswoman **Lisa Malone** said that the trip would begin May 22 if weather permitted. Endeavour, bolted to its Shuttle Carrier Aircraft, should depart Edwards at 9:00 a.m. At Kennedy Space Center, officials said they hoped to have Columbia ready to move from its OPF bay to the Vehicle Assembly Building on May 27. ["Endeavour's Return Delayed," FLORIDA TODAY, p. 6A, May 22, 1992.]

ATLAS LAUNCH DELAYED A WEEK

A General Dynamics Atlas 2's launch will be delayed until at least early next week. Company spokesman **Jim Codd** said, "We're looking to get this thing off the ground as soon as we can, but we want to do it safe." Engineers continue to work on a liquid helium pumping system failure. [Banke, FLORIDA TODAY, p. 6A, May 22, 1992; Banke, FLORIDA TODAY, p. 7A, May 28, 1992.]

EUVE MOVED TO COMPLEX 17

NASA's Extreme Ultraviolet Explorer spacecraft will be moved this evening from the cleanroom facility at Hangar AE to Launch Complex 17 on Cape Canaveral Air Force Station, FL. The move of EUVE, contained in an environmentally controlled canister, is scheduled to begin at 8 p.m. EDT with arrival at Pad 17-A about an hour later. Hoisting of EUVE into the gantry for soft mating atop the Air Force Delta 2 rocket is scheduled for about 10 p.m. EDT. The mechanical hard mate between EUVE and the Delta second stage is scheduled for Friday, May 22. EUVE will then begin approximately 10 days of integrated spacecraft and vehicle testing. Final spacecraft processing was completed the first week of this month. Earlier this week, the spacecraft was integrated with the Delta rocket's payload adapter fitting. EUVE was then prepared for the trip to the launch pad.

Tonight's move culminates the prelaunch processing which began with the spacecraft's arrival from Goddard Space Flight Center (Greenbelt, MD) at the end of January. The Air Force Delta II rocket was erected on Pad A at Complex 17 during the week of April 20 and prelaunch testing and flight preparation of the vehicle has been going smoothly. Encapsulation of the spacecraft in the nose fairing is scheduled to occur on May 29. EUVE is a satellite designed to observe astronomical objects at extreme ultraviolet wavelengths, one of the least-studied portions of the electromagnetic spectrum. The Goddard Space Flight Center manages the project for NASA's Office of Space Science and Applications, Astrophysics Division, Washington, D.C. The launch is targeted to occur on June 4 during a launch window which extends from 12:23 to 1:43 p.m. EDT. [NASA/KSC News Release No. 56-92, May 21, 1992.]

May 22: **LIVINGSTONE GETS NASA POSITION**

NASA Administrator **Daniel S. Goldin** today announced the appointment of **Bill Livingstone** as Special Assistant to the Administrator for Communications. "Bill Livingstone, who has worked with the media nationwide, brings to the agency a broad array of experience and talent," Goldin said. "He joins the new team at NASA which is dedicated to making the agency faster, better, cheaper, without compromising safety." For the past 7 years, Livingstone was Press Secretary for then U.S. Senator and now Governor **Pete Wilson** (R-CA). Previously Livingstone was Press Secretary for U.S. Senator **James McClure** (R-Idaho). He also was the Press Secretary for Wilson's gubernatorial election in 1990, and McClure's re-election in 1984. Livingstone was born in Helena, MT. He received a B.S. from Montana State University (honors) and attended graduate school at the University of Southern California in motion picture production and the Fletcher School of Law & Diplomacy in international relations. [NASA/KSC Release No. 92-71, May 22, 1992.]

May 24: **KSC PREPARES GEOTAIL FOR LAUNCH**

In July, KSC will launch the Geomagnetic Tail Laboratory aboard a Delta rocket. The Geotail recently arrived at the space center for pre-launch processing. It will be one of three satellites to take part in the Collaborative Solar-Terrestrial Research Program, a planned solar physics study by the United States, Japan and the European Space Agency. **Ken Sizemore**, Project Manager at the Goddard Space Flight Center (Greenbelt, MD), said, "The program concept is to have several spacecraft that really try to look at and understand the relationship between the sun and the Earth." The other missions in the program are the Cluster Mission and the Solar and Heliospheric Observatory Mission. [Brown, FLORIDA TODAY, p. 10E, May 24, 1992.]

[] **BASE DEVELOPMENT CO. CONTRACT**

Star Base Development Co. (Mims, FL) has been awarded a Kennedy Space Center contract, worth $148,700, to improve water lines running to Launch Complexes 39A and 39B. The contract calls for the addition of 2,700 feet of 18-inch diameter pipeline, along with 600 feet of a smaller-diameter pipeline, to the main KSC water line. ["Mims Firm Wins Contract," FLORIDA TODAY, p. 10E, May 24, 1992.]

May 26: **ENDEAVOUR: WON'T YOU COME HOME?**

NASA managers are meeting today at 7 a.m. to decide whether to begin Endeavour's return to Florida aboard the Shuttle Carrier Aircraft. Weather has kept the youngest Orbiter grounded in California. Meanwhile, at Kennedy Space Center, attention is

focusing on the upcoming STS 50 mission of the Space Shuttle Columbia. This will be the first flight of NASA's oldest Orbiter since it was modified at Rockwell's Palmdale, CA, plant. Rollover from the OPF to the VAB is scheduled for midnight May 28. [Banke, FLORIDA TODAY, p. 3A, May 24, 1992; "Weather Keeps Shuttle in California," FLORIDA TODAY, p. 2A, May 25, 1992; Brown, FLORIDA TODAY, p. 1A, May 26, 1992; KSC SHUTTLE STATUS REPORT, 10 a.m., May 26, 1992. .]

COLUMBIA: SYSTEMS CHECKED

The aft compartment and midbody of the Space Shuttle Columbia have been closed in OPF Bay 3 in preparation for its upcoming STS 50 mission. Technicians have also completed checks of tire pressure and pressure checks of the Spacelab. Work in progress: testing of the new regenerative carbon dioxide removal system; crew stowage modification for extended flights and close outs of the Orbiter's crew compartment. Scheduled work: weight and center of gravity determinations beginning tonight and transfer of Columbia to the Vehicle Assembly Building at midnight tomorrow. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 26, 1992.]

STS 46: ATLANTIS PROCESSING

In OPF Bay 1, technicians processing Atlantis for its STS 46 mission have tested the Orbiter's Ku-band antenna, completed functional tests of the waste containment system and closed out the robot arm for flight. Work in progress includes: cleaning of the payload bay; preparations to close the payload bay doors; closeouts of the midbody and aft compartment. The modification of Discovery in OPF Bay 2 continued. Leak checks of the freon coolant loops and installation of thermal blankets and thermal barriers are in process. A functional test of the Orbiter's radiators has been completed as part of the pre-STS 53 processing. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 26, 1992.]

NASA RETURNS TO FORMER LOGO

Administrator **Daniel S. Goldin** issued the following statement today: "Last week as our spirits were lifted by the triumphs of the Endeavour mission, I said, 'The magic is back at NASA,' The can-do spirit of the past is alive and well. In honor of this spirit, it seems only fitting that the original NASA insignia - affectionately known as the 'meatball' - be a part of our future. I know you feel this way, too, because large numbers of you have told me so during my visits to NASA Centers. This does not mean that as of today we will throw away stationary and repaint NASA vehicles. The new NASA will be frugal - finding ways to do everything faster, better and cheaper without compromising safety. That includes this insignia transition. But over time, the NASA symbol of old will replace the current NASA logo. Meanwhile, feel free to order your next set of business cards proudly displaying the blue ball. Take pride in the symbol that stood for NASA excellence in the past - and now - and looks to the world-class NASA of today and tomorrow.

When President Bush charged NASA with the mission of going back to the moon and on to Mars, he said we're going "back to the future." The old NASA insignia is back because the men and women of NASA wanted it back. A classic never goes out of style. On Tuesday at 1:30 p.m. I plan to talk to all of you on NASA Select about the changes that are occurring in our organization and the progress of our NASA program studies. Things are happening quickly, and I regret that it isn't always possible to give adequate notice. But I want you all to know that it is very important to me that you are all included in the

process. [NASA Special Announcement, May 22, 1992; Brown, FLORIDA TODAY, p. 1A, May 27, 1992.]

[] NEW NASA CONTINUOUS IMPROVEMENT OFFICE

NASA Administrator **Daniel S. Goldin** today announced the appointment of **Laurie A. Broedling** as Associate Administrator for Continuous Improvement. She will report directly to the Administrator and serve as NASA's primary facilitator of Total Quality Management. Broedling's appointment is effective May 26, 1992. "This appointment is an important step in bringing a world-class TQM program to NASA," Administrator Goldin said. "Laurie Broedling has an outstanding background on facilitating TQM and is regarded as an expert in the field." Broedling has had extensive experience leading the implementation of TQM in federal agencies. Before joining NASA, she served in the Department of Defense as Deputy Under Secretary for Total Quality, where she was responsible for overall direction of DoD's implementation of total quality principles and practices. From 1970 to 1989, she was employed by the Department of the Navy, where she held numerous managerial posts. These included serving as the Secretary of the Navy's TQM Technical Advisor, where she created the structure that institutionalized implementation of TQM across the entire Navy and Marine Corps. Broedling also has been a professor at San Diego State University and George Washington University, where she taught graduate and undergraduate courses in strategic planning, organizational behavior and organizational development. She holds a B.A. in psychology from Brown University and an M.A. and Ph.D. in industrial-organizational psychology from George Washington University. [NASA/KSC News Release No. 92-72, May 26, 1992.]

May 27: STS 50: COLUMBIA POWERED DOWN

Columbia has been powered down in preparation for its rollover from OPF Bay 3 to the Vehicle Assembly Building for the final preparations for its June STS 50. Work in progress: closeouts of the Orbiter's crew compartment; preparations to determine the weight and center of gravity; cycles of the crew module hatch; preparations to mount the Orbiter on the transporter. Work scheduled: transfer of Columbia to the Vehicle Assembly Building tomorrow evening; rollout to Launch Pad 39A June 3; Terminal Countdown Demonstration Test June 8-9; launch in late June. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 27, 1992.]

[] STS 46: ATLANTIS PROCESSING ACTIVITIES

Technicians in Orbiter Processing Facility Bay 1 are cleaning Atlantis' payload bay in preparation for closing the bay doors. They are also preparing for closeouts of the vehicle's midbody and aft compartment and are applying protective foaming to closeout the main engines. Rollover to the VAB for mating with its boosters and external tank is scheduled for next week; after five days in the Vehicle Assembly Building, Atlantis will be rolled out to Launch Complex 39B. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 27, 1992.]

[] DISCOVERY IN OPF BAY 2

Discovery continues to undergo modification in OPF Bay 2 in preparation for its upcoming STS 53 mission for the Department of Defense. Work in progress: Orbiter systems testing including: power reactant storage and distribution system, main propulsion system and instrumentation system; servicing of the water coolant loop No. 2; installation

of thermal blankets and thermal barriers. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 27, 1992.]

ENDEAVOUR FERRY FLIGHT

Endeavour departed the Dryden Flight Research Facility this morning at 9 a.m. EDT enroute for Sheppard Air Force Base (Wichita Falls, TX) where the 747 Shuttle Carrier Aircraft will be refueled. If weather permits, the ferry flight will continue to Columbus (MS) where the vehicles will remain overnight. The estimated time of arrival at KSC is 1 p.m. EDT tomorrow (May 28). Weather conditions have been unacceptable between California and Texas for the ferry flight since last Thursday (May 21). Officials will be assessing weather conditions during the ferry flight to determine the best flight path. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 27, 1992; Banke, FLORIDA TODAY, p. 7A, May 28, 1992.]

May 28:

STS 50: ORBITER CREW MODULE CLOSED

Technicians in OPF Bay 3 have closed out the Orbiter crew module in preparation for rolling Columbia over to the Vehicle Assembly Building on May 29. Work in progress: determining the weight and center of gravity and mounting the Orbiter on the transporter. Work scheduled: rollout to Launch Complex 39A on or about June 3; Terminal Countdown Demonstration Test planned for June 8-9; launch in late June. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 28, 1992.]

STS 46: ATLANTIS PAYLOAD BAY CLEANED

Workers in OPF Bay 1 have finished cleaning the payload bay of Atlantis and are preparing to close the payload bay doors. They are also working to closeout the midbody and aft compartment and applying protective foaming to closeout the main engines. Work scheduled: rollover to the VAB for mating with boosters and external tank next week and rollout to Launch Complex 39B after spending five days in the Vehicle Assembly Building. In OPF Bay 1, workers are verifying the security of the Orbiter's airlock, servicing the water coolant loop No. 2 and processing a number of the vehicle's systems. Modifications to the Orbiter continue. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 28, 1992.]

ENDEAVOUR FINALLY LEAVES DRYDEN

The Space Shuttle Endeavour finally departed Dryden Flight Research Facility in California yesterday and landed at Biggs Army Air Field (El Paso, TX) where it remained overnight. Officials are assessing the weather conditions to determine the possibility of continuing the ferry flight today. [KSC SHUTTLE STATUS REPORT, 10 a.m., May 28, 1992.]

May 29:

ATLAS LAUNCH SET FOR TONIGHT

General Dynamics Corp. is planning to launch its Atlas rocket tonight between 7:10 and 9:06 EDT. The rocket will carry an Intelsat spacecraft like the one recently reboosted by Endeavour on its maiden voyage. "Every time we have a launch it's a sweaty-palms experience. We get anxious, but we have a lot of confidence in General Dynamics," said Intelsat spokesman **Tony Trujillo**. A first attempt to launch the Atlas was scrubbed on May 20 due to a problem with the rocket's liquid helium system which is used to chill the upper-stage engines. Tests have proved since that this system is now working properly.

[Banke, FLORIDA TODAY, p. 1A, May 29, 1992; Atlas 2A Rocket Launch Delayed Again," FLORIDA TODAY, p. 5A, May 30, 1992.]

STS 50: COLUMBIA ROLLS TO VAB

Columbia, having reached a "significant milestone," was rolled over from the OPF to the Vehicle Assembly Building this morning at 8:30 a.m. The STS 50 mission will be the first for Columbia since it underwent extensive modifications at the Rockwell plant in Palmdale, CA. Among the changes were additional fuel storage tanks to allow longer stays in space, a landing drag chute, an improved nosewheel steering system and more powerful brakes. The STS 50 crew will include Commander **Richard N. Richards**, Pilot **Kenneth D. Bowersox**, Mission Specialists **Bonnie J. Dunbar, Carl J. Meade** and **Ellen S. Baker**, and Payload Specialists **Lawrence DeLucas** and **Eugene Trinh**. In the VAB preparations were begun to mate the vehicle to its external tank and solid rocket boosters. Work scheduled: a Shuttle Interface Test to begin at midnight May 30; rollout to Launch Complex 39A is target for 12:01 a.m. June 3; a Terminal Countdown Demonstration Test is set for June 8-9 and launch is aimed at late June. [KSC SHUTTLE STATUS REPORT, 11 a.m., May 29, 1992; Halvorson, FLORIDA TODAY, p. 5A, May 30, 1992.]

STS 46 PROCESSING

In OPF Bay 1, technicians have closed the payload bay of Atlantis and foamed its main engines in preparation for its upcoming STS 46 mission. Still in progress: closeouts of the midbody; cleaning of the aft compartment; attachment of small doublers on the rudder speed brake over minor corrosion. Atlantis' rollover to the VAB for mating with its booster and external tank is set for next week; rollout will occur after Atlantis has spent five days in the VAB. [KSC SHUTTLE STATUS REPORT, 11 a.m., May 29, 1992.]

STS 50: DISCOVERY PROCESSING

Discovery continues to undergo modifications and inspections while in OPF Bay 2. Water coolant loop No. 2 is being serviced and systems being tested include the main propulsion system and the instrumentation system. [KSC SHUTTLE STATUS REPORT, 11 a.m., May 29, 1992.]

ENDEAVOUR MAY RETURN TO CALIFORNIA

If bad weather forces Endeavour to abort its ferry flight to Florida for a return to California it will be another Shuttle era first. The vehicle is left Biggs Army Air Base (El Paso, TX) this morning and flew to Kelly Air Force Base (San Antonio, TX) where it landed at 10:48 a.m. to refuel and assess weather conditions before continuing on to Florida. [Banke, FLORIDA TODAY, p. 4A, May 29, 1992; KSC SHUTTLE STATUS REPORT, 11 a.m., May 29, 1992; Halvorson, FLORIDA TODAY, p. 5A, May 30, 1992.]

May 30:

SPACEPORT USA STAMP CEREMONY

Stamp collectors and the general public today will have the unusual privilege of a second-day-of-issue ceremony in the Galaxy Theatre of Kennedy Space Center's Spaceport USA to purchase and cancel a new set of space stamps honoring U S and Soviet space exploration. This morning's 10 o'clock ceremony will include representatives from both the United States Post Office and KSC will be on hand to welcome everyone and explain the origins behind the stamp. Presentations and speeches will be made by **Joe Guthrie**,

Director of Marketing and Community Affairs for the Orlando Post Office, **Allen Vaughan**, Supervisor of Mails from the Titusville Post Office, and **Marvin Jones**, KSC Director of Center Support Operations. The first-day-of-issue ceremony will be held at an international stamp exposition in Chicago, IL, in the presence of several Russian dignitaries. According to Vaughan, second-day-of-issue ceremonies rarely occur but Titusville's proximity to the nation's doorway to space also makes it the ideal place to release the new commemorative set of stamps. The cancellation features the Shuttle flying over North America as seen from outer space. These stamps mark the 15th collection commemorating the exploration of outer space. [NASA/KSC News Release No. 57-92, May 28, 1992.]

ATLAS LAUNCH DELAYED TILL JUNE 2

A problem with its Centaur upper stage has delayed the launch of the General Dynamics Atlas 2A until June 2. The problem is in the system that controls the amount of pressure with the Centaur stage's liquid oxygen tank, according to officials. [Banke, FLORIDA TODAY, p. 7A, May 31, 1992.]

LSO'S CALIVA WINS EXPERT SYSTEMS AWARD

Lockheed Space Operations Co. employee **Robert Caliva**, along with two other Brevard County computer experts, has won an international computer competition. Caliva and his colleagues are graduate students at the University of Central Florida. "We were very surprised to win. This was an international competition with entries from around the world. It was extremely competitive," Caliva said. The winning entry was a computer systems prototype called KUDOS (Kennedy Switching Data Network User Diagnostic Optimization System; it uses artificial intelligence in aiding computer operators troubleshoot a computer network problem. The KUDOS system is being evaluated for further development and use at Kennedy Space Center. ["Trio Wins Competition," FLORIDA TODAY, p. 9E, May 31, 1992.]

SMITH WINS SILVER SNOOPY AWARD

USBI Senior Mechanical Engineer **Reid Smith** has been awarded a Silver Snoopy by astronaut **James H. Newman**. He was selected for his work in implementing the Integrated Production Control System at the hangar where Shuttle solid rocket boosters are refurbished following launch. ["USBI Worker Pinned with Silver Snoopy," FLORIDA TODAY, p. 9E, May 31, 1992.]

JUNE

June 1: **DELTA LAUNCH DELAYED, AGAIN**

Problems encountered during preparations for liftoff have led to a one-day delay in launching a Delta rocket and its Intelsat payload. The launch window is now set for June 5 between 12:23 p.m. and 1:43 p.m. The problems occurred during the installation of the Delta's nose cone and in testing the small explosive devices which separate the rocket from its nine solid rocket boosters. ["Delta Launch Delayed," FLORIDA TODAY, p. 2A, June 2, 1992.]

SHUTTLE SHUFFLE TO COMMENCE

The Space Shuttle Columbia will be rolled out for STS 50 to Launch Complex 39A on June 3 and Atlantis will take its place in the VAB to complete preparations for its STS 46 mission. The moves will not occur unless Columbia passes its Shuttle Interface test successfully; that test occurs today. Endeavour, finally returned from California, is in OPF Bay 3 and Discovery is in OPF Bay 2. [Halvorson, FLORIDA TODAY, p. 2A, June 2, 1992.]

STS 50: ROLLOVER COMPLETED

The Space Shuttle Columbia was transferred May 29 from the Orbiter Processing Facility where it has now been mated with its external tank and solid rocket boosters. A Shuttle Interface Test is underway to verify critical connections between the vehicle elements and the launch platform. In addition, leak checks of the umbilicals between the external tank and Orbiter are being conducted. Rollout to Launch Complex 39A is set for 12:01 a.m. June 3, a TCDT for June 8-9 and launch in late June. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 1, 1992.]

STS 46: ATLANTIS SET FOR ROLLOVER

The Space Shuttle Atlantis will rollover from OPF Bay 1 to the Vehicle Assembly Building on June 4; at the VAB, the vehicle will be mated with its external tank and solid rocket boosters. Rollout to Launch Complex 39B will come about June 9. In OPF Bay 1, technicians are closing out the midbody and cleaning and closing the aft compartment. They are also attaching small doublers on the rudder speed brake over minor corrosion. Discovery is still undergoing inspections and modifications during its stay in OPF Bay 2; it is also undergoing systems testing and servicing of water coolant loop No. 2. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 1, 1992.]

ENDEAVOUR'S ARRIVAL

Endeavour arrived at Kennedy Space Center atop its 747 Shuttle Carrier Aircraft on May 30 at 10:50 a.m. after spending the night at Kelly Air Force Base (San Antonio, TX); the vehicle arrived at OPF Bay 3 at 1:12 a.m. May 31. Work in progress: gaining access to the vehicle and preparations to: open the payload bay doors; position the aerosurfaces and remove the tailcone. Endeavour's next mission is set for September; it will be a seven-day Japanese Spacelab flight. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 1, 1992; Banke, FLORIDA TODAY, p. 1A, May 31, 1992.]

June 2: **STS 50: COLUMBIA PREPARATIONS**

Columbia is undergoing a Shuttle Interface Test to verify critical connections between the vehicle elements and the launch platform. Leak checks are also being performed on the umbilicals between the external tank and the Orbiter. Work scheduled: retraction of platforms later this evening; rollout to Launch Complex 39A targeted for 12:01 a.m. tomorrow; Terminal Countdown Demonstration Test planned for June 8-9. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 2, 1992.]

ATLANTIS: STS 46 PROCESSING

Technicians are topping off the main landing gear tires of Atlantis in OPF Bay 1; they are also cleaning the aft compartment and closing out the midbody and aft compartment. On June 3, the weight and center of gravity of Atlantis will be determined. The vehicle will be rolled over to the VAB on June 4 for mating with its boosters and external tank. Rollout to Launch Complex 39B is set for June 11. A Terminal Countdown Demonstration Test is targeted for June 15-16. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 2, 1992.]

ENDEAVOUR: TAIL CONE REMOVED

The tail cone, which had been attached to Endeavour for its ferry flight, was removed in OPF Bay 3. Processing activities for its upcoming STS 47 mission included: preparations for he frequency response test; thermal protection system operations; removing ferry flight kit items; preparations to position the aerosurfaces. In OPF Bay 2, Discovery's payload bay door hinges are being inspected and the vehicle's systems are undergoing tests. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 2, 1992.]

DELTA DELAYED AGAIN

Weather is the villain in today's postponement of the launch of a Delta 2 rocket from Cape Canaveral Air Force Station, according to launch officials. The liftoff has been rescheduled for June 6 between 12:24 to 1:43 p.m. Air Force Meteorologist Captain Ken Warren said, "Weather advisories kept workers off the launch pad most of the day, so they couldn't take care of all their business." ["Weather Forces Another Delay in Delta Liftoff," FLORIDA TODAY, p. 6A, June 3, 1992.]

COLUMBIA ROLLS TO LC 39A

Columbia began its 3.5 mile trip to Launch Complex 39A with an 11:50 p.m. rollout from the VAB; the trip took six hours. The liftoff of STS 50 is targeted now for June 24. Meanwhile, Atlantis is being readied for a rollover into the Vehicle Assembly Building and subsequent rollout for its STS 46 mission scheduled for mid-July. ["Columbia Moves to Launch Pad 39A," FLORIDA TODAY, p. 6A, June 3, 1992; "NASA Readying Columbia for Longest Shuttle Flight," THE ORLANDO SENTINEL, June 4, 1992.]

June 3: **STS 50: COLUMBIA HARDDOWN AT PAD**

"Columbia is returning to the launch pad for the first time in over a year," announced KSC spokeswoman Lisa Malone. The Space Shuttle Columbia was harddown at Launch Complex 39A at 6 a.m. this morning. The Shuttle Interface Test to verify critical connections between the vehicle elements and the launch platform was completed today

as were leak checks of the umbilicals between the external tank and the Orbiter. Work in progress: moving the rotating service structure around the vehicle; making connections between the launch pad umbilicals and the vehicle; gaining access to various parts of the Orbiter and vehicle; preparations to power up the vehicle. The Terminal Countdown Demonstration Test for the STS 50 mission is scheduled for June 8-9 and launch is targeted for June 24. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 3, 1992; Halvorson, FLORIDA TODAY, p. 1A, June 4, 1992.]

ATLANTIS: OPF BAY 1 PROCESSING

In OPF Bay 1, technicians topped off the main landing gear tires of Atlantis. Work in progress: structural leak checks; closeouts of the crew module and aft compartment; cleaning of the aft compartment. Work scheduled: weight and center of gravity determination is set for June 4; rollover of Atlantis to the Vehicle Assembly Building for mating with its external tank and solid rocket boosters; rollout to Launch Complex 39B is planned for June 11; the mission TCDT is set for June 15-16. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 3, 1992.]

ENDEAVOUR AND DISCOVERY PROCESSING

In OPF Bay 3, processing of Endeavour for its second mission - STS 47 - continues: preparations for the frequency response test; thermal protection system operations; removing ferry flight kit items; preparations to open the payload bay doors. In OPF Bay 2, technicians are inspecting Discovery's payload bay door hinges; testing Orbiter systems; inspecting the Orbiter and making modifications and servicing the freon coolant loop No. 1. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 3, 1992.]

STS 52 EXTERNAL TANK - VAB

The external tank for Mission STS 52, Columbia's flight scheduled this fall with the LAGEOS-2 and USMP-1 payloads, arrived by barge yesterday in the Complex 39 Turn Basin. The tank was transferred into the VAB transfer aisle yesterday afternoon. The tank will be positioned in a checkout cell where it will be prepared for launch. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 3, 1992.]

June 4:

ATLAS THIRD TRY JUNE 8

General Dynamics Corp. will make its third attempt to launch its Atlas 2 rocket on June 8; the payload is an Intelsat satellite like the one recently reboosted by Endeavour's STS 49 mission. The launch window extends from 7:12 p.m. until 9:06 p.m. The two previous delays were due to communications problems with the rocket's Centaur upper stage. ["Atlas Delayed Until Monday," FLORIDA TODAY, p. 6A, June 4, 1992.]

SPC WORKER DIRECTIVE

This week Lockheed Space Operations's head of security issued a directive requiring security guards to conduct "walk-throughs" of KSC buildings during overnight shifts and on the weekends. The memo directed the security personal: "You will be overt, not clandestine." Lockheed spokesman **John Williams** said, "We have long-standing procedures, we have internal audits, we have inspections, we have supervision to deal with problems of this type and when rare violations occur, we move as quickly and

effectively as possible to address the problem," he said. "I think that's also a fair statement of our position and I don't really want to elaborate."

Company officials also announced today that LSO might cut up to 250 jobs this summer because of NASA's tight budget. "The job cuts are related to the NASA budget, but in the bigger picture it is part of a streamlining process we're going through to become more efficient," according to Lockheed spokesman **J. B. Klump**. Already sixty people have accepted early retirement and another forty may depart by the end of the month. [Halvorson, FLORIDA TODAY, p. 4A, June 5, 1992.]

DELTA HAS TWO CHANCES TO LAUNCH

If weather prevents the launch of an Air Force Delta 2 tomorrow between 12:34 and 1:43 p.m., then a second attempt on Sunday is possible, according to Lt. Col. **Randy Moyer**, Commander of the 1st Space Launch Squadron, at Patrick Air Force Base. If the Delta launch is delayed until Sunday (June 7), then the upcoming commercial Atlas 2 launch may be delayed until June 9. Moyer said that under informal Eastern Test Range rules, a rocket will be given two consecutive days to launch before having to wait for the next booster scheduled. [Banke, FLORIDA TODAY, p. 4A, June 5, 1992.]

STS 50: COLUMBIA AT LC 39A

The rotating service structure around Columbia has been completely moved by 9:30 a.m. today. Work in progress: making connections between the launch pad umbilicals and the vehicle; electrical checks of the auxiliary power units. Work scheduled: TCDT targeted for June 8-9; Flight Readiness Review set for June 9; late June launch date. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 4, 1992; NASA/KSC News Release No. 51-92, June 4, 1992.]

STS 46: CENTER OF GRAVITY DETERMINED

In Orbiter Processing Facility Bay 1, the weight and center of gravity of Atlantis has been determined in preparation for the Shuttle's upcoming STS 46 flight. Work in progress: preparations to tow the Orbiter to the Vehicle Assembly Building by midday; inspections of the landing gears. Work scheduled: mating with its boosters and external tank the night of June 5; rollout to LC 39B set for June 11; TCDT set for June 15-16. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 4, 1992; "Atlantis to be Fitted Today With Boosters, External Tank," FLORIDA TODAY, p. 4A, June 5, 1992.]

ENDEAVOUR/DISCOVERY PROCESSING

Technicians in OPF Bay 3 have completed a test of Endeavour's flight controls and are working on the following items: thermal protection system operations; removing ferry flight kit items; preparations to open the Orbiter's payload bay doors. Discovery is in OPF Bay 2 where it is continuing to undergo extensive modifications and structural inspections. Systems testing continues as do inspections of the payload bay door hinges and servicing of the freon coolant loop no. 1. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 4, 1992.]

June 5: **STS 50: UMBILICALS CONNECTED**

Workers at Launch Complex 39A have connected launch pad umbilicals to the vehicle elements of Columbia. Pad processing for STS 50 includes: preparations for the main engine flight readiness test in which the valves will be cycled and sensors will be calibrated; preparations to load hypergolic propellants into the Orbiter; circulating and sampling the hydraulic fluid; connections of the auxiliary power units. Work scheduled: helium signature leak test (June 8); TCDT for June 8-9; Flight Readiness Review (June 9); launch targeted for late June. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 5, 1992.]

ATLANTIS IN VAB FOR STS 46 PREPS

Atlantis was towed from the Orbiter Processing Facility yesterday and was inside the VAB by 6:30 p.m. Today Atlantis was mated with its external tank and solid rocket boosters for its STS 46 mission. Scheduled work includes a rollout to Launch Complex 39B on June 11 and a TCDT for June 15-16. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 5, 1992.]

June 6: **DELTA II/EUVE SCRUB**

Today's launch of the Delta II/EUVE mission was postponed at NASA's request because they could not maintain effective communication between the EUVE spacecraft and Goddard Space Flight Center. The postponement announcement came at 12:30 p.m. EDT. According to Goddard: The spacecraft team could not confirm today that they had proper flight data on the spacecraft. The depth of testing needed to troubleshoot this problem could not be done in the launch configuration. Therefore, it was decided to stand down today because there was insufficient time left in the launch window to do the proper troubleshooting. The team also wanted to provide the maximum time to be ready for a launch tomorrow. When the launch was postponed, the Eastern Range was "red" because an Air Force tracking radar at Antigua was down and was being evaluated. The exact nature of the problem with the radar had not been determined when the launch was scrubbed. Also, weather conditions were unacceptable starting at 3 minutes into the launch window due to the presence of active thunderstorm anvil (electrically charged) clouds within 10 nautical miles of the launch site, which is a triggered lightning concern. The launch has been rescheduled for Sunday (June 7) between 12:24 and 1:43 p.m. EDT. ["Joint USAF/NASA Statement on Delta II/EUVE Launch Scrub," June 6, 1992; "Problems Cause Delay Of A Satellite Mission," THE NEW YORK TIMES, p. 15A, June 6, 1992; "Storms, Technical Glitches Delay Delta Rocket Launch," THE ORLANDO SENTINEL, June 7, 1992.]

ENDEAVOUR AND DISCOVERY

Endeavour processing STS 47 activities include: preparations to remove the forward reaction control system and to offload residual hypergolic propellants; troubleshooting the Ku-band antenna; post-flight inspections of the thermal protection system; opening of the payload doors. Discovery continues to undergo modifications for STS 53 in OPF Bay 2. In addition technicians are doing Orbiter systems testing including the main propulsion system, fuel cells and vacuum drying freon coolant loop No. 1. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 5, 1992.]

LC 17A

June 7: **DELTA DOES IT**

The frequently delayed Delta 2 mission to launch the Extreme Ultraviolet Explorer Spacecraft finally lifted off from Cape Canaveral Air Force Station at 12:40 p.m. Scientists will not know for two to three weeks whether the Extreme Ultraviolet Explorer is working properly; the EUVE was deployed successfully 71 minutes after the Delta lifted off. Even this launch was again delayed, for three minutes, to avoid a collision with the Mir, the Russian space station. The launch was the 32nd consecutive successful Delta flight since 1986; it was purchased from the Air Force by NASA for $46 million. The Delta was originally built to launch a Global Positioning Satellite (NAVSTAR) for the military. [Date, THE ORLANDO SENTINEL, p. A-3, June 8, 1992; "Satellite Launched to Observe Ultraviolet Radiation of Stars," THE NEW YORK TIMES, p. A9, June 8, 1992; Brown, FLORIDA TODAY, p. 2A, June 8, 1992; MISSION STATUS REPORT: NASA'S EXTREME ULTRAVIOLET EXPLORER (EUVE), June 9, 1992.]

[] **STS 50 CREW ARRIVES FOR TCDT**

The STS 50 crew arrived at Kennedy Space Center today to participate in the mission's Terminal Countdown Demonstration Test. At the traditional arrival press conference, Commander **Richard N. Richards** said, "Well, thanks for coming out, I understand there's some competition today and quite frankly that's where we're going to," referring to the upcoming Delta launch. "It's great to always see a spaceflight - even if it's an unmanned spaceflight. It's a thrill to see it all." The crew will attend briefings about the status of launch preparations; learn how to escape complex 39A during an emergency; participate in a two-day practice countdown, which begins at 8 a.m. today. The STS 50 crew also includes Pilot **Kenneth D. Bowersox**, Payload Commander **Bonnie J. Dunbar**, Payload Specialists **Lawrence DeLucas** and **Eugene Trinh** and Mission Specialists **Carl J. Meade** and **Ellen S. Baker**. Astronauts **Joe Prahl** and **Al Sacco** are alternates for STS 50. Launch of the 48th Shuttle mission is set for no earlier than June 25. [Hall, FLORIDA TODAY, p. 2A, June 8, 1992; Halvorson, FLORIDA TODAY, p. 1A, June 9, 1992.]

[] **SMITH WINS SNOOPY**

USBI Senior Mechanical Engineer **Reid Smith** has been awarded a Silver Snoopy by astronaut **James H. Newman**. Smith was chosen for his work in implementing the Integrated Production Control System at the hangar where solid rocket boosters are returned for refurbishing after launch. The system tracks more than 2000 rocket booster parts. ["USBI Worker Pinned With Silver Snoopy," FLORIDA TODAY, p. 9E, June 7, 1992.]

[] **GOLDIN APPOINTS BROEDLING & LIVINGSTONE**

Laurie Broedling has been appointed by NASA Administrator **Daniel S. Goldin** to be Continuous Improvement Office Administrator. Goldin also tapped **Bill Livingstone** to be Special Assistant to the Administrator for Communications. ["Goldin Taps Two to New Posts," FLORIDA TODAY, p. 9E, June 7, 1992.]

June 8: **STS 50: FRC SYSTEM CHECKS**

At Launch Complex 39A, technicians have completed Forward Reaction Control System quick disconnect leak checks; a Flight Readiness Test of the main engines and auxiliary power unit exhaust checks and lube oil servicing. Work in progress: helium signature leak checks; TCDT (call to stations at 8:00 a.m.); pre-launch propellant load preparations.

Work scheduled: TCDT set for 11 o'clock June 9; Flight Readiness Review today and tomorrow; pre-launch propellant loads; auxiliary power unit hot fire. [KSC SHUTTLE STATUS REPORT, 10 a.m, June 8, 1992.]

ATLANTIS: MATING TO ET & SRBS

In the VAB, Atlantis has been mated to its external tank and its solid rocket boosters. Work in progress: Shuttle Interface Verification test; external tank and solid rocket booster closeouts. Rollout to Launch Complex 39B is set for 12:01 a.m. June 11. [KSC SHUTTLE STATUS REPORT, 10 a.m, June 8, 1992.]

DISCOVERY: FUEL CELL TEST COMPLETED

Technicians have completed a fuel cell single volt test on Discovery in OPF Bay 2. Work in progress: Orbiter electrical system validations checks; water spray boiler leak and functional tests and freon coolant loop servicing. [KSC SHUTTLE STATUS REPORT, 10 a.m, June 8, 1992.]

ENDEAVOUR: WASTE CONTAINMENT SYSTEM REMOVED

Technicians have removed Endeavour's waste containment system and cycled and checked the payload bay doors. They also drained the APU catch bottle. Work in progress: ball valve leak checks; Ku-antenna function tests; cargo downloading; chin panel removal; helium tank venting; Reaction Control System pod thruster inspections. [KSC SHUTTLE STATUS REPORT, 10 a.m, June 8, 1992.]

KSC CONSOLIDATION PLAN KILLED

NASA has killed a plan under which all top Shuttle managers would have been transferred to Kennedy Space Center. A new proposal would have only 10 engineers from Johnson Space Center move to KSC. "Based on the things (Shuttle Program Director **Leonard S. Nicholson**) saw as important for him to be involved in, he felt those responsibilities would be better served with his being at JSC," said Nicholson's deputy **Brewster H. Shaw, Jr.**, a former astronaut. **Bob Allen**, Executive Director of the Space Coast Economic Development Commission (Titusville, FL) said, "We were getting all the signals - right up until the ax fell - that this (consolidation) plan went right along with a leaner, meaner, tighter NASA. We're disappointed, but we're not giving up. We're going to keep working with NASA to point out that there are advantages in locating these positions at KSC." [Brown, FLORIDA TODAY, p. 1A, June 9, 1992.]

VAB MODIFICATIONS CONTRACT

International Steel, Inc. (Orlando, FL) has been awarded a $6,644,820 contract to modify High Bays 1 and 3 in the Vehicle Assembly Building, provide additional clearance height to the facility's north transfer aisle door, add girder reinforcement to support new overhead cranes, and build an interior platform to provide access to and catch debris from the roof of the building. As part of another contract, two new 325-ton overhead cranes will be added to the VAB superstructure to lift the heavier ASRM segments into the VAB high bays. International Steel will, provide the reinforcement to the overhead VAB superstructure to support the new cranes. [NASA/KSC News Release No. 63-92, June 8, 1992.]

[] **WATSON PAVING CONTRACT**

Watson Paving, Inc. (Cocoa, FL) has been awarded a $2,206, 742 fixed price contract to restore and pave the shoulders of the Shuttle Landing Facility (SLF) runway at Kennedy Space Center and to reposition and upgrade part of its lighting system. Other work includes the replacement of the original runway edge lights that were installed in 1975 and the electrical transformer that provides their power. The new lights will mark the original 300-foot-wide concrete runway, while the asphalt-paved shoulders will extend 50 feet beyond the lights on each side. The lights are amber for the first 2,000 feet at each end and white in the middle section. [NASA/KSC Release No. 62-92, June 8, 1992.]

June 8: **COLUMBIA TO LAUNCH JUNE 25**

NASA will launch the Space Shuttle Columbia on a 13-day mission on June 25, 1992. NASA officials selected the launch date at the conclusion of the Flight Readiness Review held today at the Kennedy Space Center, FL. Mission STS 50, planned to be the longest flight to date in the Shuttle Program, will carry the United States Microgravity Laboratory-1 payload into orbit. A Spacelab long module will serve as an in-orbit laboratory for seven crew members and 31 experiments devoted to materials science, fluid physics, combustion science and technology. Columbia will be launched into a 184 statute mile circular orbit inclined 28.5 degrees to the Equator from Launch Complex 39A. The launch window on June 25 opens at 12:07 p.m. EDT and closes at 2:37 p.m. EDT. Columbia will end its mission with a landing at Dryden Flight Research Facility, CA. The mission duration is planned for 12 days, 20 hours and 29 minutes. Commanding the mission will be **Richard N. Richards.** Columbia's pilot will be **Kenneth D. Bowersox.** Mission Specialists are **Bonnie J. Dunbar, Ellen S. Baker,** and **Carl J. Meade.** Payload Specialists are **Larry DeLucas** and **Eugene Trinh.** [STS-50 Launch Advisory, June 9, 1992.]

June 9: **TCDT COMPLETED: STS 50**

At Launch Complex 39A, technicians and the STS 50 crew have completed the Terminal Countdown Demonstration Test (TCDT). Other tasks completed at the pad: helium signature leak checks; Flight Readiness Test of the main engines; Auxiliary Power Unit exhaust checks and lube oil servicing. Work in progress: Mission Manager's Flight Readiness Review; pre-launch propellant load preparations; closeouts for Auxiliary Power Unit hot fire; Inertial Measurement Unit calibrations. Work scheduled: pre-launch propellant loads and Auxiliary Power Unit hot fire. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., June 9, 1992.]

[] **ATLANTIS: MATING COMPLETED**

In the Vehicle Assembly Building, workers completed the mating of Atlantis to its external tank and its solid rocket boosters. Work in progress: shuttle interface verification test; main propulsion system tests; Orbiter and external tank mate closeouts. Rollout for the STS 46 mission is scheduled for 12:01 a.m. June 11. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., June 9, 1992.]

[] **ENDEAVOUR: PAYLOAD DOWNLOADING**

In Orbiter Processing Facility Bay 3, technicians have completed downloading Endeavour's payload. The auxiliary power unit catch bottle has been drained and the payload bay doors cycled and checked. Work in progress: ball valve leak checks; Ku-

antenna function tests; waste containment system drain and flush; main engine test shield removal; reaction control system pod thruster inspections. The forward reaction control system has been removed from the Orbiter. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., June 9, 1992.]

[] **DISCOVERY: COOLANT LOOP SERVICED**

In OPF Bay 2, Discovery's freon coolant loop servicing is complete to date and the fuel cell single volt test has been finished. Technicians are making Orbiter electrical system validations checks and water spray boiler leak and functional tests. [KSC SHUTTLE STATUS REPORT, 11:30 a.m., June 9, 1992.]

[] **DISCOVERY FLOW DIRECTOR NAMED**

Kennedy Space Center has named **David A. King** as Flow Director for the Space Shuttle Discovery. King joins three other flow directors at KSC who oversee the work performed on the Shuttles Endeavour, Atlantis and Columbia. "David's keen sense of responsibility coupled with his bright and energetic attitude are essential ingredients for a good flow director and he is an asset to the team," said **Jim Harrington**, Director of Shuttle Operations.

As flow director, King is responsible for the overall management of all government and contractor activities associated with processing the Orbiter for each of its assigned missions. Responsibilities extend to all areas of flight hardware processing to assure timely achievement of schedule milestones. King began his career with NASA in 1983 as a Shuttle main propulsion system engineer, a position he held for six years before becoming vehicle manager for the Orbiters' Discovery and, subsequently, Endeavour. As vehicle manager, he was responsible for the daily activities of Orbiter testing and processing. He held this position for the past two years until being named as flow director.

"I am excited about the challenges of being a flow director and taking a more active role in managing the overall operation of getting an Orbiter ready for flight. My previous experience as a vehicle manager and as a systems engineer will be invaluable for me on this job," said King. Discovery is currently undergoing a modification and improvement period. Its next flight, Mission STS 53 which is a Department of Defense mission, is tentatively planned for this fall. [NASA/KSC News Release No. 65-92, June 9, 1992; "NASA Appoints King As Discovery's New Boss," FLORIDA TODAY, p. 9E, June 14, 1992.]

June 10: **ATLANTIS ROLLOUT TONIGHT**

Technicians have completed: a Shuttle interface verification test; Shuttle interface stray voltage tests and the main propulsion system tests. Work in progress: Orbiter and external tank mate final closeouts and preparations to retract work platforms. Work scheduled: rollout to Launch Complex 39B set for 12:01 a.m. June 11 and the STS 46 Terminal Countdown Demonstration Test (TCDT) has been scheduled for June 16. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 10, 1992.]

[] **UTSMAN: SHUTTLE PROGRAM DIRECTOR**

NASA Associate administrator for Space Flight **Jeremiah W. Pearson, III**, today announced that **Thomas Utsman**, currently Deputy Associate Administrator, Office of Space Flight, will

become the Program Director for the Space Shuttle. He will be given responsibility for directing long-range Shuttle planning, Space Shuttle continuous improvement activities and overseeing efforts to reduce Shuttle operations costs while maintaining safety. Program Manager, Space Shuttle, **Leonard S. Nicholson** will remain at the Johnson Space Center (Houston, TX) where he will oversee the day to day management of the Space Shuttle Program and the integration of the Shuttle and Space Station Freedom. Management of vehicle integration and launch processing will continue to be the responsibility of Nicholson's deputy, **Brewster H. Shaw, Jr.**, at the Kennedy Space Center, FL.

"One of the main challenges for the Shuttle Director's office in the coming years will be to oversee the integration of the Shuttle and Space Station Freedom," said Pearson. "In light of that, it will be more efficient for the Director to be at JSC where personnel reside who are responsible for the mission operations for both Shuttle and Station, as well as engineering and design support for both programs." Freedom will be carried up in 18 separate stages aboard the Space Shuttle and assembled in space. Assembly of the orbiting international research center will begin in late 1995. Previously, the relocation of the Shuttle Program Director from NASA Headquarters to KSC required the transfer of some program management functions and would have involved the relocation of approximately 20 people. Under this revised organization, a limited set of functions will be transferred to support the Program Manager in the areas of configuration and data requirements, ground operations and project integration support will involve approximately 10 people being relocated to KSC. [NASA/KSC News Release No. 92-83, June 10, 1992; "Utsman Takes Control in Shuttle Reorganization," FLORIDA TODAY, p. 9E, June 14, 1992.]

STS 50: FRR COMPLETED

STS 50's Flight Readiness Review has been completed at Kennedy Space Center; mission managers have set the launch for June 25 and the window extending from 12:07 p.m. till 2:37 p.m. EDT. The Terminal Countdown Demonstration Test has been completed as have the Inertial Measurement Unit calibrations. Work in progress: pre-launch hypergolic propellant load and closeouts for auxiliary power unit hot fire. Work scheduled: auxiliary power hot fire; special cryogenic confidence tanking test of the Extended Duration Orbiter (EDO) pallet. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 10, 1992; Date, THE ORLANDO SENTINEL, June 10, 1992.]

STS 47: ENDEAVOUR PROCESSING

In OPF Bay 3, technicians have completed Orbiter power system validations; payload downloading and chin panel removal. Work in progress: removal of forward reaction control system; Ku-antenna function tests; waste containment system drain and flush; main engine heat shield removal; reaction control system pod thruster inspections; ball valve leak checks. Work scheduled: transport FRCS to hypergolic maintenance facility and ammonia boiler purge and drain. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 10, 1992.]

STS 53: DISCOVERY PROCESSING

Freon coolant loop servicing on Discovery is complete to date and the fuel cell single volt test is finished. Work in progress: Orbiter electrical system validations checks; water spray boiler leak and functional tests; main propulsion system leak and functional test and

power reactant and storage distribution system tests. Work scheduled: auxiliary power unit lube oil and hot oil flush and internal and external lightning subsystem verification. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 10, 1992.]

June 11:

COLUMBIA AT LC 39A

At LC 39A Columbia's TCDT has been finished as have the inertial measurement unit calibrations. Work in progress: pre-launch hypergolic propellant load with the pad closed to non-essential personnel; closeouts for auxiliary power unit hot fire scheduled for June 12. A special cryogenic confidence tanking test of the Extended Duration Orbiter pallet is set for June 15. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 10, 1992.]

ATLANTIS ROLLS OUT TO LC 39B

First rollout motion of Atlantis occurred at 11:54 p.m. last night and the Orbiter was hard down on the pad at 7:16 a.m. this morning. A Shuttle interface verification test and Orbiter tank and external tank mate final closeouts have been completed. Work in progress: pad validations; rotation of service structure around the vehicle; procedures to power-up the vehicle. The Terminal Countdown Demonstration Test for the STS 46 mission is scheduled for June 16; the crew will arrive at KSC late June 20. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 10, 1992.]

STS 47: ENDEAVOUR PROCESSING

Endeavour's Forward Reaction Control System has been completed in OPF Bay 3; Orbiter power system validations are finished and the Orbiter's waste containment system has been drained and flushed. Work in progress: ammonia boiler purge and drain; Ku-antenna functional tests; main engine heat shield removal; reaction control system pod thruster inspections; SRB stacking operations in the Vehicle Assembly Building. The transport of the forward reaction control system to the hypergolic maintenance facility has been scheduled. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 10, 1992.]

DISCOVERY: STS 53 PROCESSING

Processing activities on Discovery for its upcoming STS 53 mission continue in OPF Bay 2: Orbiter electrical system validation checks; water spray boiler leak and functional tests; main propulsion system leak and functional test; power reactant and storage distribution system tests. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 10, 1992.]

GOLDIN ORDERS SAFETY REVIEW

NASA Administrator **Daniel S. Goldin** has ordered Shuttle managers to review safety aspects of Atlantis' STS 46 mission; the review is not expected to delay the launch scheduled for July. A number of panels and boards have expressed concern about the tethered satellite Atlantis will deploy on STS 46; they fear that the satellite could smash into the Orbiter as it is reeled back into the cargo bay. Astronaut **Jeffrey A. Hoffman** said, "The initial reaction that most people have when they learn that we are about to attach the Shuttle to a satellite by a rope is something like 'Oh my god; why would anybody want to do that?" He said that the satellite has been developed to discover new ideas for propulsion, generating electricity, creating artificial gravity and study Earth's upper atmosphere from orbit. Hoffman added, "We feel extremely confident that we have addressed adequately all the safety concerns." The target date for the launch is July 16

and the crew includes: Commander **Loren J. Shriver**, Pilot **Andrew M. Allen**, Mission Specialists **Franklin R. Chang-Diaz, Marsha S. Ivins, Claude Nicollier** of the European Space Agency and Italy's **Franco Malerba**. [Banke, FLORIDA TODAY, p. 1A, June 12, 1992.]

[] **KSC REDUCES NIGHT SHIFT**

Kennedy Space Center announced today that it would reduce the number of employees on its third shift, described as highly paid and less productive than the first and second shifts. "It's a productivity issue," said **Robert B. Sieck**, Deputy Director of Shuttle Management and Operations. "The way we're set up to do business, we're more productive on a two-shift, five-days-a-week basis." That kind of work schedule had been a goal of former KSC Director **Forrest S. McCartney** who said, "That's the way it ought to be. I never liked the odd work week. People work better on first and second shift - I don't care what kind of job you have." Sieck said the cutbacks are unrelated to the recent reports that "overnight workers at KSC were wasting time talking on the phone, reading books and sleeping on the job." Sieck also said that 700 workers are employed on the graveyard shift and that number would probably never be reduced to zero. He said that some tasks, such as hazardous operations or waterproofing Shuttle tiles, are better to schedule with fewer people around. [Brown, FLORIDA TODAY, p. 4A, June 12, 1992.]

June 12: **EDO TANKING TEST PLANNED**

Engineers at Kennedy Space Center will conduct a special cryogenic tanking test of the Extended Duration Orbiter (EDO) tanks located on the EDO pallet inside the payload bay of the Shuttle Columbia; the test is scheduled for June 15 at Launch Complex 39A. The cryogenic confidence test of the EDO tanks is designed to provide the sequence of operations required to prepare the Shuttle for launch on its record-breaking 13-day mission later this month. The test will also allow engineers the opportunity to evaluate EDO loading and detanking techniques and procedures and provide data necessary to develop accurate time lines for Power Reactant Storage and Distribution (PRSD) system servicing during the launch countdown.

Columbia's mission, featuring the United States Microgravity Laboratory-1, will require the additional cryogenic consumables to allow the crew and vehicle to remain in orbit for the planned 13 days. The EDO tanks are located in the aft end of Columbia's payload bay on a special EDO pallet. There are eight tanks on the pallet, four for liquid hydrogen and four for liquid oxygen. Each tank has been individually tested, but not as an integrated system. These extra tanks will complement the four sets of Orbiter PRSD tanks already mounted under the lining of the Orbiter's payload bay. During June 15's confidence test, engineers will use essentially the same procedure used during a launch countdown. The EDO tanks will be filled first, followed by the loading of the original Orbiter PRSD tanks. Liquid oxygen tanking operations will occur first. After stabilization, engineers will proceed with liquid hydrogen tanking operations. Each of the eight EDO tanks have independent isolation valves. As each tank fills, these valves will be cycled to give test team members an opportunity to pressurize and leak check the various tanks and associated fill and drain lines.

When all of the tanks are at flight pressure and stabilized, further evaluations will be made. Detanking will follow on the same day. These onboard circular cryogenic tanks supply the Orbiter's fuel cells which, in turn, produce electrical power for the Shuttle

during flight. The by-product of combining the liquid hydrogen and liquid oxygen reactants is drinking water for the crew. The addition of the EDO tanks and pallet was part of the extensive modifications made to the Shuttle Columbia over the past year. The extra tanks will permit the vehicle to remain safely in orbit for up to 16 days. [NASA/KSC News Release No. 72-92, June 12, 1992.]

STS 50: COLUMBIA FUELING OPERATIONS

Fueling operations for pre-launch hypergolic propellant loads have been completed at Launch Complex 39A. Other work in progress prior to the launch of Columbia on its STS 50 mission: pre-launch hypergolic propellant load with the pad closed to non-essential personnel; closeouts for auxiliary power unit hot firing scheduled for early on June 13. Scheduled work: retracting the rotating service structure from around the vehicle; auxiliary power unit hot firing; special cryogenic confidence tanking test of the Extended Duration Orbiter pallet set for June 15; checkout of the regenerable CO^2 removal system (RCRS) controllers and actuators; launch set for 12:07 p.m. EDT, June 25. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 12, 1992.]

ATLANTIS: STS 46 AT LC 39B

At Launch Complex 39B, Atlantis has had the rotating service structure moved around the vehicle; procedures were undertaken to power-up the vehicle and the Shuttle Interface Verification test was completed. Work in progress: launch pad validations; Orbiter hydraulic operations; preparations for the mission's Terminal Countdown Demonstration Test (TCDT). The TCDT is scheduled for June 16 and the crew is expected to arrive on June 14. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 12, 1992.]

OPF BAY 3: ENDEAVOUR PROCESSING

In OPF Bay 3, technicians have completed mass memory unit loads into Endeavour's computers. Other completed work includes: ammonia boiler purge and drain; reaction control system pod thruster inspections; removal of forward reaction control system; waste containment system drain and flush; Orbiter power system validations. Work in progress: Ku-band antenna functional tests; 17-inch disconnect inspections; main engine heat shield removal; preparations for removal of main engines; SRB stacking operations in Vehicle Assembly Building; transport forward reaction control system to hypergolic maintenance facility. Scheduled work includes main engine removal and payload bay radiator inspections. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 12, 1992.]

DISCOVERY: OPF BAY 2 PROCESSING

In OPF Bay 2, Discovery's freon coolant loop has been serviced and an auxiliary power unit lube oil and hot oil flush has been conducted. Work in progress: Orbiter electrical system validations checks; water spray boiler leak and functional tests; main propulsion system leak and functional test; power reactant and storage distribution system tests. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 12, 1992.]

June 14: **STS 46 CREW ARRIVES AT KSC**

The seven-member crew of STS 46 arrived at Kennedy Space Center today to attend briefings, participate in a Terminal Countdown Demonstration Test and to learn how to

escape Launch Complex 39B in the event of an emergency. KSC spokesman **Bruce Buckingham** said that "everything is still on schedule" for a June 25 launch of Atlantis. The crew of STS 46 includes Commander **Loren J. Shriver**, Pilot **Andrew M. Allen** and Mission and Payload Specialists **Jeffrey A. Hoffman, Franklin R. Chang-Diaz, Claude Nicollier, Marsha S. Ivins** and **Franco Malerba**. Meanwhile, workers at Launch Complex 39A are preparing Columbia for its STS 50 mission by loading toxic rocket propellant aboard the Orbiter and testing its three auxiliary power units. Tomorrow, workers will test tanks in the cargo bay by filling them with liquid oxygen and liquid hydrogen. [Banke, FLORIDA TODAY, p. 1A, June 14, 1992.]

June 15: **STS 50: JUNE 25 LAUNCH DAY**

The Space Shuttle Columbia will launch its STS 50 mission on June 25; that was the decision of the just completed Flight Readiness Review held at Kennedy Space Center. A paperwork review documenting Columbia's assembly process relieved concerns of launch officials that a turbopump was cracked. Concerns remain about a turbopump attached to one of Atlantis' three main engines. The launch of Atlantis' STS 46 mission may be delayed from July 16 if the suspect pump must be replaced. [Banke, FLORIDA TODAY, p. 1A, June 16, 1992; SEE "EDO Test Completed: STS 50" below.]

[] **LOGO CHANGE OPPOSED BY NEA DIRECTOR**

National Endowment for the Arts Director **Mina Wright Berryman** thinks that NASA Administrator **Daniel S. Goldin's** desire to return to using the old "meatball" logo for the agency is a bad idea. Ms. Berryman said, "The worm [current NASA logo] is not simply a logo but an integral part of NASA's comprehensive visual standards program." She cited the agency's winning of a presidential award for design excellence in 1984. Goldin has not directed that current uses of the worm be excised, but rather that the return to the "worm" be phased in. NASA officials said that repainting the Shuttles would cost $400,00o per Orbiter. ["NASA Logo Change Sends Some Workers Into Orbit," THE ORLANDO SENTINEL0, June 16, 1992.]

June 16: **EDO TEST COMPLETED: STS 50**

At Launch Complex 39A, technicians have completed their Extended Duration Orbiter cryogenic confidence test; the auxiliary power unit hot firing and the pre-launch hypergolic propellant load. Work in progress: checkout of the regenerable CO^2 removal system (RCRS) controllers and actuators; auxiliary power unit closeouts; cavity purge and leak checks and launch countdown preparations. Ordnance installations and hypergolic fuel pressurization have been scheduled. Engineers concluded yesterday that there is no concern for a "tip" seal on the high pressure oxidizer turbopump on Columbia's main engine number three. Documentation revealed the seal had been removed and fully inspected prior to being installed on the pump. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 16, 1992.]

[] **STS 46: LAUNCH PAD VALIDATIONS**

At Launch Complex 39B, technicians have completed launch pad validations; they have opened the payload bay doors and completed Orbiter hydraulic operations. Work in progress: terminal countdown demonstration test (TCDT) set for 11:00 a.m.; rudder speed brake bondings; preparations for auxiliary power unit pre-launch propellant servicing. Work scheduled: pre-launch propellant loading operations; inertial

measurement unit calibrations; helium signature test. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 16, 1992.]

[] **ENDEAVOUR: SPACELAB INTERFACE TESTS**

In OPF Bay 3, technicians and the crew of STS 47 - Endeavour's next mission - have completed Spacelab equipment interface tests, window inspections, reaction control system pod thruster inspections and Orbiter power system validations. Work in progress: preparations for removal of main engines; main engine drying operations; SRB stacking operations in Vehicle Assembly Building; payload bay door radiator inspections and Ku-band inspections. Main engine removal has been scheduled. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 16, 1992.]

[] **PRSD TESTS COMPLETED: DISCOVERY**

Discovery continues to undergo extensive inspections and modifications in Orbiter Processing Facility Bay 2. Work completed: power reactant and storage distribution system tests; freon coolant loop servicing (complete to date) and payload doors opened. Work in progress: Orbiter electrical system validations checks and water spray boiler leak and functional tests. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 16, 1992.]

[] **ENDEAVOUR'S DOORS DAMAGED ON STS 49**

The payload bay doors of Endeavour were damaged on its STS 49 mission, the maiden voyage for the newest Space Shuttle. "Both of the 60-foot-long doors are slightly warped, and a corner of the right door has come loose from its frame," according to NASA Vehicle Manager **Pepper Phillips**. A search for other damage is underway, he said. NASA managers have not yet decided to discuss whether to replace the doors, Phillips said, and he was unable to estimate the cost of such a replacement or whether Endeavour's next mission - STS 47 - will have to be delayed. The damage was caused when a latch securing the left-hand door failed to fasten properly. Phillips said, "Our problem now is to go find out why the left-hand door failed to latch as it was designed." [Banke, FLORIDA TODAY, p. 4A, June 17, 1992; Date, THE ORLANDO SENTINEL, July 8, 1992.]

June 17: **STS 50: CAVITY PURGE/LEAK CHECKS**

At Launch Complex 39A, technicians are making the final preparations for Columbia's STS 50 mission, now scheduled for June 25. Work completed: part one of the ordnance operations; checkout of the regenerable CO^2 removal system (RCRS); special extended duration Orbiter (EDO) cryogenic confidence test; cavity purge and leak checks. Work in progress: pre-launch hypergolic fuel pressurization (with the pad closed to all but essential workers); auxiliary power unit closeouts; launch countdown preparations. The second part of the ordnance operations and aft compartment closeouts have been scheduled. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 17, 1992.]

[] **ATLANTIS: TCDT COMPLETED**

At the same time that Columbia is undergoing pre-launch preparations at Launch Complex 39A, Atlantis is at Launch Complex 39B undergoing initial preparations for its STS 46 mission. Work completed: terminal countdown demonstration test (TCDT) and inertial measurement unit calibrations. Work in progress: rudder speed brake bondings; preparations for auxiliary power unit pre-launch propellant servicing; helium signature test.

Pre-launch propellant loading operations have been scheduled. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 17, 1992.]

STS 47: ENDEAVOUR IN OPF BAY 3

Technicians have completed: Spacelab equipment interface tests with the STS 47 crew in attendance; window inspections; reaction control system pod thruster inspections; Orbiter power system validations. Work in progress: preparations for main engine removal; Ku-band antenna tests; fuel cell voltage tests; main engine drying operations; payload bay door radiator inspections; SRB stacking operations in the Vehicle Assembly Building. Main engine removal has been scheduled. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 17, 1992.]

DISCOVERY: INSPECTIONS CONTINUE

In Orbiter Processing Facility Bay 2, technicians are continuing tests and inspections of the Space Shuttle Discovery. Work completed: freon coolant loop servicing (complete to date) and the payload bay doors were opened. Work in progress: power reactant and storage distribution system tests; Orbiter electrical system validations checks; water spray boiler leak and functional tests; auxiliary power unit hot oil flush; main propulsion system leak and functional tests. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 17, 1992.]

SHUTTLE TO DOCK WITH MIR IN 1993

In October 1993, a Russian cosmonaut will fly aboard a Space Shuttle and in 1994 a Shuttle will dock with a Russian Mir Space Station. These missions will fulfill an agreement signed today by Russian Federation President **Boris N. Yeltsin** and American President **George Bush**. The international docking will be the second such event in space history; in 1975 an Apollo Command Module docked with a Soyuz capsule in fulfillment of a 1972 agreement with President **Richard M. Nixon** and Soviet Secretary General **Leonid Brezhnev**. Several cosmonauts will train with American astronauts for the STS 60 mission on which the crew will space walks and practice techniques for assembling a space station. ["Presidents Approve U.S.-Russian Space Crew Mission," FLORIDA TODAY, p. 5A, June 18, 1992; Leary, THE NEW YORK TIMES, p. A9, June 18, 1992.]

ATLAS 2 LAUNCH SET: JUNE 20

U.S. Air Force Major **Garian Perugini** announced today that June 20 will be the launch date for an Atlas 2 rocket which will carry a $160 million military communications satellite. "So far everything looks good. We haven't heard of any problems with the vehicle or payload," he said. The satellite is the second of ten Department of Defense spacecraft to be launched. [Halvorson, FLORIDA TODAY, p. 8A, June 18, 1992.]

June 18:

STS 50: RCRS CHECKOUT

The Space Shuttle Columbia is awaiting its June 25 launch on Launch Complex 39A. Work completed: pre-launch hypergolic fuel pressurization; ordnance operations (part 1); checkout of the regenerable CO^2 Removal System (RCRS); special extended duration Orbiter cryogenic confidence test; cavity purge and leak checks. Work in progress: aft compartment closeouts; launch countdown preparations; auxiliary power unit closeouts; contingency spacesuit installation into the Orbiter's airlock. Work scheduled: ordnance

operations (part 2); purge of the external tank; countdown begins at 8:00 a.m. June 22; astronaut arrival expected at 10:00 a.m. on June 22; launch remains scheduled for 12:07 p.m. EDT, June 25. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 18, 1992.]

[] **ATLANTIS: HELIUM SIGNATURE TEST**

At Launch Complex 39B, Atlantis has just undergone a helium signature test; preparations for auxiliary power unit pre-launch propellant servicing; payload bay doors closed for hypergolic operations. Work in progress: pre-launch propellant loading operations with the pad closed to all but essential personnel. Rudder speed brake bondings are scheduled. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 18, 1992.]

[] **ENDEAVOUR IN OPF BAY 3**

In Orbiter Processing Facility Bay 3, Endeavour has just concluded fuel cell voltage tests and main engine drying operations. Work in progress: payload bay flood light inspections; preparations for main engine removal; payload bay door radiator deservicing and post flight inspections; SRB (right aft center segment) stacking operations in the Vehicle Assembly Building. Main engine removal is scheduled for next week. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 18, 1992.]

[] **STS 53: DISCOVERY IN OPF BAY 2**

To date, the freon coolant loop servicing of Discovery has been completed and the payload bay doors opened. Work in progress: power reactant and storage distribution system tests; Orbiter electrical system validations checks; water spray boiler leak and functional tests; auxiliary power unit hot oil flush; main propulsion system leak and functional tests. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 18, 1992.]

[] **ATLANTIS' ENGINES CLEARED FOR LAUNCH**

"The pump seal has been exonerated and there is no need to research it further, or do any work on the seal at the pad," said Kennedy Space Center spokesman **Bruce Buckingham**. No problems were discovered after a review of paperwork documenting inspections performed on the Orbiter's engines. NASA Administrator **Daniel S. Goldin** had ordered the safety review. The target for Atlantis' STS 46 launch had been July 16, but the unofficial date has now been moved by managers to July 21. The change was made because flight controllers in Houston need a few more days of training between the end of Columbia's STS 50 mission and the beginning of STS 46. [Banke, FLORIDA TODAY, p. 6A, June 19, 1992.]

June 19: **STS 50: SPACESUITS INSTALLED**

Pad workers at LC 39A have installed contingency spacesuits in Columbia's airlock in preparation for its STS 50 mission, now scheduled for June 25. The technicians also completed auxiliary power unit closeouts. Work in progress: forward aft compartment closeouts; launch countdown preparations; purge of external tank; mass memory unit loads. Work Scheduled: part two of ordnance operations; countdown beginning at 8:00 a.m. EDT June 22; astronaut arrival scheduled for 10:00 a.m. EDT June 22; launch set for 12:07 p.m. EDT June 25. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 19, 1992]

ATLANTIS: PAYLOAD BAY DOORS CLOSED

A helium signature test has been completed on Atlantis and the Orbiter's payload bay doors have been closed for hypergolic operations. Launch Complex 39B has been closed to all but essential personnel for the pre-launch propellant loading operations. Work scheduled: rudder speed brake bondings; cabin vent door checks; auxiliary power unit checks. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 19, 1992]

STS 47: ENDEAVOUR PREPARATIONS

Work completed: payload bay flood light inspections; main engine drying operations and fuel cell voltage tests. Work in progress: preparations for main engine removal; payload bay door radiator deservicing and post flight inspections; water spray boiler leak and functional tests; solid rocket boosters stacking operations in Vehicle Assembly Building High Bay 3. Work scheduled: main engine removal next week; removal of payload bay door radiator. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 19, 1992]

STS 53: DISCOVERY PROCESSING IN OPF BAY 2

Freon coolant loop servicing on Discovery has been completed and the Orbiter's payload bay doors have been opened. Work in progress: power reactant and storage distribution system checks; Orbiter electrical system validations tests; water spray boiler leak and functional tests; auxiliary power unit hot oil flush; main propulsion system leak and functional checks. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 19, 1992]

O & C FIRE: "NOTHING"

"It turned out to be nothing," said KSC spokesman **Karl Kristofferson** about the fire which took place today in the Operations and Checkout Building at Kennedy Space Center. Kristofferson said, "It wasn't much flame. It was mostly smoke and odor." The fire occurred when a lamp was accidentally knocked into a wall of clear plastic, which was put up to protect employees from an asbestos-removal area. Kristofferson said that two gallons of water were used to stop the melting plastic. The incident began at approximately 12:07 p.m.; workers were able to return to work within thirty minutes. Officials said that no one was hurt by the fire and that there was no estimate of damage. [Banke, FLORIDA TODAY, p. 5A, June 20, 1992.]

STS 50: AFT COMPARTMENT WORK

The launch of STS 50 remains on schedule for 12:07 June 25, according to KSC spokesman **Bruce Buckingham**. Tomorrow pad workers will continue last minute work inside Columbia's aft compartment looking toward a closeout by late tomorrow night. Ordnance installation should be completed by tomorrow night at about 8 p.m. At Cape Canaveral Air Force Station, the Mars Observer spacecraft arrived and was taken to Hangar AO. Dozens of support personnel arrived for temporary residence in Brevard County to continue processing the spacecraft for its September 16 launch aboard a commercial Titan 3 rocket. [NASA/KSC News Release No. 79-92, June 19, 1992; Banke, FLORIDA TODAY, p. 5A, June 20, 1992; Date, THE ORLANDO SENTINEL, p. A-1, June 21, 1992.]

June 20: **ATLAS 2 SET FOR LAUNCH TONIGHT**

An Air Force Atlas 2 set for launch tonight between 5:49 and 7:16 p.m. EDT; it had a 60 percent probability of acceptable weather for launch with thunderstorms and clouds the only potential constraints to launch. However, an unexplained power outage forced the Air Force to scrub the launch and reschedule it for June 22. The launch was rescheduled for June 21, but a thunderstorm in the launch area prevented a planned 5:49 p.m. liftoff. "We had lightning within 10 miles of the launch pad and no relief in sight," according to Maj. **Garian Perugini**, spokesman for the 45th Space Wing which is headquartered at Patrick Air Force Base. Engineers were still attempting late Saturday to determine the reason for the power outage which interrupted the flow of electricity to the rocket, payload and ground support equipment. Power was restored, after 45 minutes, with a backup diesel generator. The Atlas is to deploy a communications satellite into orbit. The launch was rescheduled for June 22 between 5:50 and 7:17 p.m.

Meanwhile, at Cape Canaveral Air Force Station, a Titan 4 rocket which has been rusting at its launch pad will be partially disassembled and eventually removed from the pad. The Titan has been at the pad for a year. Col. **Frank Stirling** said, "It's a frustrating setback." He said that engineers had spotted water and rust between segments of one of the Titan's boosters. "They told me it looked like a bathtub ring with rust and some water in there," Stirling said. He added that engineers were concerned that the corrosion might lead to O-ring failure like that which led to the Challenger accident in 1986. [Date, THE ORLANDO SENTINEL, June 20, 1992; "Launch Tonight," FLORIDA TODAY, p. 1A, June 20, 1992; Halvorson, FLORIDA TODAY, p. 1A, June 20, 1992; Halvorson, FLORIDA TODAY, p. 1A, June 21, 1992; Halvorson, FLORIDA TODAY, p. 1A, June 22, 1992.]

June 22: **STS 50 COUNTDOWN BEGINS TODAY**

The countdown for Columbia's STS 50 mission starts today at 8:00 a.m. EDT. The seven-member crew is expected to arrive at Kennedy Space Center at about 10:00 a.m. The crew includes Commander **Richard N. Richards**, Pilot **Kenneth D. Bowersox** , Mission Specialists **Bonnie J. Dunbar**, **Ellen S. Baker**, and **Carl J. Meade** and Payload Specialists **Eugene Trinh** and **Lawrence DeLucas**. The launch window for STS 50 begins at 12:07 p.m. EDT. Preparations are underway for loading of onboard fuel cell cryogenic tanks. A purge of the external tank has been completed as have been mass memory unit loads and the second part of ordnance operations. Aft closeouts remain to be done. Loading of onboard fuel cell cryogenic tanks is set for June 23. There is a 70 percent chance of favorable weather for launch day. [Date, THE ORLANDO SENTINEL, pp. A-1 & A-8, June 21, 1992; Halvorson, FLORIDA TODAY, p. 1A, June 22, 1992; KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 22, 1992; "Shuttle Count Begins," THE NEW YORK TIMES, p. B8, June 23, 1992; "Weather Forecast for STS 50," June 23, 1992; KSC SHUTTLE STATUS REPORT, 10:00 a.m., June 23, 1992.]

STS 46: HELIUM SIGNATURE TEST DONE

At Launch Complex 39B, technicians have completed a helium signature test upon Atlantis' fuel lines and have completed the STS 46 pre-launch hypergolic propellant loading operations. Work in progress: opening payload bay door and gaining access to payload bay; rudder speed brake bondings; removal of the cabin vent door motor. Work scheduled: payload purge operations and vent door checks; auxiliary power unit checks; arrival of payload to pad. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 22, 1992.]

STS 47: ENDEAVOUR PROCESSING

Mass memory unit loads have been completed in OPF Bay 3 where Endeavour is being processed for its STS 47. Main engine drying operations and fuel cell voltage tests have also been completed. Work in progress: main engine removal; payload bay door radiator deservicing and post flight inspections; auxiliary power unit lube oil servicing; removal of payload bay door radiator; water spray boiler leak and functional tests; solid rocket booster (right forward segment) stacking operations in Vehicle Assembly Building high bay 3. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 22, 1992.]

BOWERSOX: "NEAT SCIENCE"

STS 50 Pilot **Kenneth D. Bowersox**, in his Shuttle Landing Facility landing remarks, said today that "we've got a lot of neat science, and it's got a lot of potential to do good things for us." Payload Commander **Bonnie J. Dunbar** said, "We've been training for a year and nine months and we think we're ready." The crew, which also includes Commander **Richard N. Richards**, Mission Specialists **Ellen S. Baker** and **Carl J. Meade** and Payload Specialists **Lawrence DeLucas** and **Eugene Trinh**, arrived at the Shuttle Landing Facility this morning just after 10 o'clock. NASA Test Director **Eric F. Redding** said, "Columbia may be the oldest Orbiter, but I feel with all the modifications...it's the best Orbiter we have." Halvorson, FLORIDA TODAY, p. 1A, June 23, 1992.]

GOLDIN: NASA SHOULD PRIVATIZE

"I think portions of the space program can and should be privatized," said NASA Administrator **Daniel S. Goldin** at a Gannett News Service interview. "It's not going to happen overnight. 'We're going to go to Mars and we want to privatize that' - well, no company can quite do that. On the other hand, there are certain routine functions that get performed that I think should be (privatized)." **Jerry Grey**, Director of Science and Technology Policy at the American Institute of Aeronautics and Astronautics, said, "The previous administrator [**Richard H. Truly**] was not strong on either commercialization or privatization -he thought NASA should run the show. The fact that Goldin is coming in and saying he is going to push it is definitely news." [Eisler, FLORIDA TODAY, p. 2A, June 23, 1992.]

June 23:

ATLAS DELAYED BY WEATHER, AGAIN

An attempt to launch the Air Force's Atlas 2 was scrubbed by bad weather on June 21; bad weather prevented even scheduling an attempt for June 22. The launch has been tentatively rescheduled for today, though weather may also prevent a liftoff this evening. The Air Force decided not to schedule the launch until its morning weather briefing. If the mission must be delayed again, the earliest possible launch date would be June 27,after the STS 50 launch now scheduled for June 25. The Atlas will carry a $160 million military communications satellite into orbit. [Halvorson, FLORIDA TODAY, p. 2A, June 23, 1992; "Summer Showers Stall Atlas Launch," FLORIDA TODAY, p. 1A, June 24, 1992; Date, "Atlas Delayed," THE ORLANDO SENTINEL, June 23, 1992.]

"CREWED" MISSION

Space policy experts working on a refinement of an international convention on manned space flight suggest that the gender-neutral term "crewed" for missions which include a woman. Currently, NASA uses the term "manned," by NASA Administrator **Daniel S.**

Goldin said that he had "promised his daughter he'd change it," said Goldin's spokeswoman **Barbara Schwartz**. ["Crewed Mission," USA TODAY, p. 3A, June 23, 1992.]

STS 50: LAUNCH STATUS

With the launch countdown underway, technicians at Launch Complex 39A closed Columbia's aft compartment for flight at about 3 p.m. yesterday. Work in progress: loading the liquid oxygen and liquid hydrogen reactants into the Orbiter's fuel cell storage tanks and into the tanks on the extended duration Orbiter pallet; pad closed to all by essential personnel until about 5 p.m. tonight. Work scheduled: replacement of two of three TACAN antennas which failed during self tests last night; troubleshooting of a liquid oxygen temperature transducer on main engine No. 2 main combustion chamber; stowage of flight crew equipment; activation of the Orbiter's communications systems tonight; move rotating service structure away from the vehicle at 11 a.m. tomorrow; loading of propellant into the external tank beginning at 3:47 a.m. June 25; launch scheduled for 12:07 p.m. June 25.

"We think the highest probability is that (the temperature sensor) is the problem, and we'll get it fixed and press on for Thursday," said **Leonard S. Nicholson**, Shuttle Program Director. Options include replacing the sensor and flying the Orbiter as is and working around the sensor problem. Flight Crew: The flight crew will perform fit checks of their equipment and have a medical exam. Commander **Richard N. Richards** and Pilot **Kenneth D. Bowersox** flew in the Shuttle Training Aircraft this morning. The crew will have a briefing with astronaut support personnel to discuss procedures in boarding the Orbiter on launch day. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 23, 1992; Brown, FLORIDA TODAY, p. 1A, June 24, 1992; Date, THE ORLANDO SENTINEL, June 23, 1992.]

STS 46: ATLANTIS PROCESSING

At Launch Complex 39B, workers are purging the cavity between the external tank and Atlantis. They are also attaching small doublers on the rudder speed brake and replacing a motor for vent door no. 3. Launch of STS 46 is targeted for mid-July. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 23, 1992.]

ENDEAVOUR PROCESSING IN OPF BAY 3

Work in progress includes: removing the three main engines; preparations for Ku-band antenna tests; testing of the forward reaction control system at the Hypergolic Maintenance Facility; leak and functional tests of the water spray boilers; deservicing of freon coolant loop no. 1; systems tests of the power reactant storage and distribution system. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 23, 1992.]

DISCOVERY: OPF BAY 2

In Orbiter Processing Facility Bay 2, Discovery continues to undergo processing activities: leak and functional tests of the water spray boilers; inspections of the main propulsion system; connecting auxiliary power unit No. 3; flushing the ammonia system. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 23, 1992.]

June 24: STS 50 READY: GLITCHES FIXED

During the night pad technicians successfully replaced and retested the liquid oxygen temperature transducer. They replaced two TACAN navigation systems. One of those units, located in the middeck failed the retest and is being replaced in parallel with the launch countdown. They also activated the Orbiter's communications system and loaded liquid oxygen and liquid hydrogen reactants into the Orbiter's fuel cell storage tanks and into the tanks on the extended duration Orbiter (EDO) pallet. Work in progress: countdown entered a 13 hour, 47 minute built-in hold at the T-11 mark (at 8 a.m. today); stowing items in the crew compartment; replacing and retesting one of the TACAN navigational aids; preparations to move the rotating service structure at about 2 p.m. weather permitting; activation of the inertial measurements; preparing the pad area for launch.

Work scheduled: begin loading propellant into the external tank at 3:47 a.m. June 25; crew wake up at 6:30 a.m. June 25 for breakfast at 7:30 a.m.; crew suiting and departure for the launch pad; launch scheduled for 12:07 a.m. EDT, the opening of a 2 and 1/2 hour window. Today the flight crew will receive a briefing on the status of the vehicle, payload and weather. STS 50 Pilot **Kenneth D. Bowersox** is scheduled to fly in a T-38 aircraft and the crew is maintaining the same sleep/wake cycle they will be on during the STS 50 mission. There is a 40 percent chance of having acceptable weather conditions at the time of launch. "It's almost too close to call," said Captain **Mike Adams**, Air Force weather officer. "I'd have to put $2 on Mother Nature." Because of the launch of STS 50, Spaceport USA will be closed today until one hour after launch. Launch Director **Robert B. Sieck** said that a delay past Friday in launching Columbia could push the liftoff into next week so the Air Force could launch its Atlas 2 rocket which has been scrubbed three times already. [KSC SHUTTLE STATUS REPORT, 11:00 a.m., June 24, 1992 ;Halvorson, FLORIDA TODAY, p. 1A, June 25, 1992; "Spaceport USA Closed Today," FLORIDA TODAY, p. 3A, June 25, 1992; "Shuttle Countdown," USA TODAY, p. 3A, June 25, 1992; Leary, THE NEW YORK TIMES, p. A19, June 25, 1992.]

ATLANTIS: MOTOR REPLACED

At Launch Complex 39B, technicians replaced one of Atlantis' motors for vent door No. 3 and purged the cavity between the external tank and the Orbiter. Work in progress: preparations to close the payload bay doors; preparations to power down the Orbiter until after the STS 50 launch. The STS 46 mission remains scheduled for mid-July. [KSC SHUTTLE STATUS REPORT, 11 a.m., June 25, 1992.]

ENDEAVOUR: STS 47 PROCESSING

Endeavour's three main engines have been removed during the Orbiter's stay in OPF Bay 3. Work in progress: preparations for Ku-band antenna tests; testing of the forward reaction control system at the Hypergolic Maintenance Facility; leak and functional tests of the water spray boilers; deservicing of freon coolant loop No. 1; systems tests of the power reactant storage and distribution system. [KSC SHUTTLE STATUS REPORT, 11 a.m., June 25, 1992.]

DISCOVERY: PROCESSING IN OPF BAY 2

Discovery's Ku-band antenna is being tested in OPF Bay 2; the main propulsion system is being inspected. The ammonia system is being flushed and leak and functional tests

of the water spray boilers are also underway. [KSC SHUTTLE STATUS REPORT, 11 a.m., June 25, 1992.]

June 25: **STS 50 LAUNCH ROARIN' SUCCESS**

"We'll see you all in a couple of weeks," radioed Commander **Richard N. Richards** before Columbia began its 12th flight, the 48th mission of the Space Shuttle Program. Despite unfavorable weather - a 40 percent chance of acceptable conditions - the Space Shuttle Columbia roared into space from Launch Complex 39A only five minutes late - at 12:12:23.0534 p.m. EDT. The delay was due to cloudy weather in the launch area. "What you don't want to do," said Launch Director **Robert B. Sieck**, "is to fly through a cloud that still might have enough energy to trigger lightning." After climbing for 8 and a half minutes Columbia began orbiting Earth at 17,500 mph. Astronaut **Steven R. Nagel** flew above the KSC launch are in NASA's modified Gulfstream jet to help determine that insufficient moisture existed in the LC 39A launch area clouds to enable lightning to be generated. Prior to launch, technicians had trouble securing the side hatch of the Orbiter. In the effort to solve the hatch problem, technicians went into the crew cabin and determined that the hatch lock was working properly. Shuttle Program Director **Brewster H. Shaw, Jr.** said, "So we reclosed the hatch and took those folks out, because they didn't want to go." Engineers determined that three navigation units were working properly despite a problem with the units' computer program.

Minimal launch pad damage was sustained; mobile launcher platform No. 3 will be transferred back to the Vehicle Assembly Building July 1. The booster retrieval ships are currently towing the STS 50 boosters back to Hangar AF on Cape Canaveral Air Force Station. The Freedom Star is towing the left booster and the Liberty Star is towing the right solid rocket booster. The ships are expected to pass through Port Canaveral at 1 p.m. and 3 p.m. June 26. The estimated time of arrival at Hangar AF is 3 and 4:30 p.m. June 26. Weather conditions could hamper or slow down the towing operation. Landing of Columbia is set for Edwards Air Force Base, CA, on July 8 at 5:40 p.m. PDT at Edwards. [Halvorson, FLORIDA TODAY, pp. 1A & 4A, June 26, 1992; Date, THE ORLANDO SENTINEL, pp. A-1 & A-4, June 26, 1992; KSC SHUTTLE STATUS REPORT, 10 a.m., June 26, 1992; "7 Astronauts 'Do Science,' Not Spacewalk," USA TODAY, p. 2A, June 26, 1992; Leary, THE NEW YORK TIMES, p. A11, June 26, 1992; Brazil, THE ORLANDO SENTINEL, pp. A-1 & A-6, June 25, 1992.]

June 26: **ATLANTIS: STS 46 HAS JULY LAUNCH**

At Launch Complex 39B, Atlantis is undergoing closeouts of the rudder speed brake and power up testing. Scheduled work: transfer of the payload to the launch pad the first week of July; launch is targeted for later in July. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 26, 1992.]

ENDEAVOUR: STS 47 PROCESSING

The Space Shuttle Endeavour, now in OPF Bay 3, is undergoing processing for its upcoming STS 47 mission to take the Spacelab J into space. Work in progress: draining freon from the coolant loops; preparations for Ku-band antenna tests; functional tests of the orbital maneuvering system (OMS) pods; testing of the forward reaction control system at the Hypergolic Maintenance Facility; leak and functional tests of the auxiliary power units; systems tests of the power reactant storage and distribution system. Discovery is in OPF Bay 2 for its STS 53 processing operations: preparations to install

the right OMS pod next week; tests of the Ku-band antenna; inspections of the main propulsion system; flushing the ammonia system. [KSC SHUTTLE STATUS REPORT, 10 a.m., June 26, 1992.]

June 27: **SPACELAB J READY**

The Space Shuttle Endeavour will receive the payload for its September flight next week. The STS 47 mission will carry the Japanese-sponsored Spacelab into orbit. In January, the Spacelab was used during the microgravity sciences mission aboard Discovery. "It's been a real challenge," said Payload Manager **Glenn Snyder**. "Spacelab J may be the forerunner on how to do Spacelab missions." [Brown, FLORIDA TODAY, p. 10E, June 28, 1992.]

CONGRESSMEN TOUR KSC

U.S. Representative **George Brown** (D-CA), Chairman of the House of Representatives Science, Space and Technology Committee, and Florida Congressman **Jim Bacchus**, a member of Brown's committee, will tour Kennedy Space Center today. KSC Director **Robert L. Crippen** will escort the Congressional group on a tour which will include the Space Station Processing Facility (SSPF) now under construction to serve as the focal point for Space Station Freedom processing activities. [NASA/KSC News Release No. 84-12, June 26, 1992.]

June 29: **ATLAS: FIFTH TRY TODAY**

Bad weather has plagued the Cape Canaveral Air Force Station with such regularity this month that the Air Force will make a fifth attempt today to launch its Atlas 2 rocket; meteorologists predict only a 30% chance of favorable weather when the window opens at 5:53 p.m. and only a 50% chance by the window's close at 7:18 p.m. Thunderstorms which might trigger a lightning strike are of particular concern to launch officials. ["Atlas Rocket Will Try Again," FLORIDA TODAY, p. 1A, June 29, 1992.]

STS 46: RUDDER BRAKE BONDINGS

At Launch Complex 39B, technicians have completed rudder speed brake bondings. Work in progress: hydraulic circulation and sample operations; preparations for main engine flight readiness test and for the arrival of the payload at LC 39B. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 29, 1992.]

STS 47: ENDEAVOUR PROCESSING

Freon coolant loop deservicing and inspections have been completed on Endeavour which is undergoing STS 47 flight processing in OPF Bay 3. Work in progress: main engine removal; removal of payload bay door radiator; orbital maneuvering system leak and functional tests and solid rocket booster stacking operations in Vehicle Assembly Building high bay 3. Hydraulic operations are scheduled. Meanwhile, Discovery is in OPF Bay 2 where it is undergoing main propulsion system leak and functional checks and structural corrosion inspections. Orbital maneuvering system pod installation has been scheduled. [KSC SHUTTLE STATUS REPORT, 10:30 a.m., June 29, 1992.]

TITAN III ROLLOUT SET

The rollout of the Titan III rocket which will launch the Mars Observer spacecraft on an interplanetary trajectory is scheduled to occur July 1. The vehicle will make a slightly more than one-mile trip from the Solid Motor Assembly Building to Launch Complex 40 to begin final checkout and preparations for launch in September. The rocket is built by Martin Marietta which is responsible for launching the vehicle for NASA. [NASA/KSC News Release No. 85-92, June 29, 1992.]

GLITCH DELAYS ATLAS LAUNCH, AGAIN

The launch of an Air Force Atlas 2 rocket was called off today when a problem with a navigation unit was discovered. Engineers are working on the problem presently and the launch has tentatively been rescheduled for July 1 between 5:53 p.m. and 7:19 p.m. ["Glitch Delays Atlas Rocket," FLORIDA TODAY, p. 4A, June 30, 1992.]

June 30:

STS 46: ENGINES READY FOR TEST

Preparations have been completed at Launch Complex 39B for the main engines of Atlantis to undergo a flight readiness test; hydraulic circulation, sample operations and rudder speed brake bondings have been completed. Work in progress: main engine flight readiness test; aerosurface cycle and checks; rudder speed brake closeouts; preparations for payload arrival at LC 39B which has been scheduled. [KSC SHUTTLE STATUS REPORT, 9:30 a.m., June 30, 1992.]

STS 47: ENDEAVOUR PROCESSING

In OPF Bay 3, freon coolant loop deservicing and inspections of Endeavour have been completed as has been the removal of the payload bay door radiator. Work in progress: orbital maneuvering system leak and functional checks; payload bay keel installations; Ku-band troubleshooting; flight control checks; orbital maneuvering system functional operations; solid rocket booster stacking operations in Vehicle Assembly Building high bay 3. Work scheduled: hydraulic operations and payload bay door cycling and checks. [KSC SHUTTLE STATUS REPORT, 9:30 a.m., June 30, 1992.]

STS 53: DISCOVERY IN OPF BAY 2

Discovery's orbital maneuvering system pod has been delivered to the OPF. Work in progress: power reactant and storage distribution system tests; main propulsion system leak and functional checks; installation of onboard helium tanks; structural corrosion inspections. The orbital maneuvering system pod will be installed tonight. [KSC SHUTTLE STATUS REPORT, 9:30 a.m., June 30, 1992.]

NAVIGATION UNIT REPLACED: ATLAS

The launch of the Air Force's Atlas rocket has been rescheduled for July 2; a faulty navigation unit has been replaced and will be tested tomorrow. ["New Part Clears Atlas for Liftoff," FLORIDA TODAY, p. 4A, July 1, 1992.]